EVOlUTION OF LOCAL E-GOVERNMENT IN CENTRAL PENNSYLVANIA:
HISTORY OF DESIGN AND DEVELOPMENT OF THE STATE COLLEGE BOROUGH
GOVERNMENT WEBSITE

A Thesis in
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by

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ABSTRACT

The emergence of the Web 2.0 has renewed interest among politicians, public administrators and academics in the role of information and communication technologies (ICTs) in government at the local level since municipalities are now facing unique challenges that have never before touched their daily operations. Much has been written and debated, with considerable attention being given to a number of frameworks that conceptualize complex patterns of e-government development. Yet, lack of empirical analysis of innovation in e-government, in particular, related to evolutionary patterns of design and development of local government websites can be characterized as a gap in literature. Therefore, the objective of this research was to study a single case of e-government adoption and development over time in a fairly small community in Central Pennsylvania, the Borough of State College.

This study, framed by the synergistic combination of two theoretical tools, sociotechnical theory and the maturational model of e-government innovation, offers thorough qualitative analysis of data derived from 12 semi-structured interviews, municipal archives, web content and web log statistics. The key research question has been phrased with intent to help explore how the design, online content and functionality of one selected government website have been shaped in response to shifts in administrative policies, goals and priorities of local government as well as changes in political and socioeconomic environment at the state and federal level.

Examining the findings of this research potentially have important implications as it may help create better ways of understanding not only the sociotechnical nature of designing and developing e-government portals but also may cast additional light on a question of whether technology shapes social dynamics and social processes—in turn—determine the variety of uses to which it is put.
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The origins of my intellectual efforts, of which is this thesis represents the first step, began as an attempt to offer a nuanced appreciation of what new and also emerging ICTs are contributing to the reconfiguration of public administration, particularly at the local level of government. It argues that contemporary ICTs, and mostly, the Internet, in their complex interweaving with social factors and political endeavors, contribute subtly, and at times significantly, to the practice of government.

This project has been influenced by a number of people. My greatest thanks go to my thesis advisors and committee members, Drs. John Bagby, Andrea Tapia and Eileen Trauth, for their intellectual guidance and encouragement to bring this project to the finish line. My appreciation also goes to the many administration and IT staff of the Borough of State College government, who have been invaluable in bringing this project to a close through helping me in conducting research and locating historical statistical and other archival data. And finally, as always, endless gratitude to my family for their steadfast support and encouragement—my husband who has wisely understood the stresses involved, and my daughter who cheered me up from the distant shores of the Pacific.
Chapter 1

Introduction

Problem Statement

In the 1970s and the 1980s, earlier information technologies (IT) were largely internal to public agencies at all levels of government. However, since the mid-1990s, government use of the Web combined with rapidly growing rates of the Internet penetration\(^1\) in American society lead to dramatic new possibilities for municipal governments to communicate with their citizens, local businesses and other public organizations. Many researchers were able to identify a new trend when a greater range of government tasks becomes more associated with the “front office” rather than the “back office”. Having said that, there are still two ways to evaluate effects of information technology on government performance: internal (i.e., organizational efficiency) and external (i.e., promoting e-governance and e-democracy). The latter seems particularly important in times when citizen trust in government is in decline and participation is low. The recent public opinion poll from the Pew Research Center indicates that 80% of Americans don’t trust government (The Pew Research Center for the People & the Press, April 18, 2010). Such distrust is not limited to the federal government, “there is a similar pattern in opinions about the impact of local government – 51% now see the impact of their local government as positive, down from 64% in 1997”. As reported in the Huffington Post, “what the country wants is a community solution to the problems but not necessarily a federal government solution” (Sidoti, 2010).

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\(^1\) In 2007, 69.26% of households in PA had access in the Internet based on Internetworldstats.com data (http://www.internetworldstats.com/am/USA_Internet_Usage_2007.pdf)
These facts illuminate the need for change, the need to break away from this pattern of growing political distrust. In theoretical tradition of political science (e.g., Delli Carpini & Keeter, 1996), an optimal democracy would contain citizens who possess high levels of political knowledge, efficacy, and participation. In other words, citizens would have greater trust in government if they believe that by participating they can make a difference and increase government responsiveness to their demands. It is commonly accepted that access to government information on the Internet enhanced by sustained government support of civic engagement (e.g., Internet discussion forums) via official government portals has potential to significantly and positively affect citizens’ trust in government (Pardo, 2000). Since 2001, International City/County Management Association (ICMA) has done a number of national citizen surveys, which demonstrate the most successful strategies now emerging from local civic experiments that put new emphasis on mobilizing citizens for dialogue, deliberation, and collaborative problem solving. This trend is now called democratic governance, or e-governance if these experiments are mediated by web-based technologies.

With this in mind, it would be worthwhile to look at a single local government website with intention to find out how that portal came into existence to begin with, in addition to learning whether and how such municipal e-government may execute emerging strategies of democratic governance that apparently lead to greater citizen participation and higher level of citizen trust.

**Definitions and Terms**

E-government as an inter-disciplinary study that attracts scholars of such diverse fields as information science, public administration, organization studies and political science, is now a front-burner topic of considerable academic, business and government interest. As Paul Henman
mentioned in his new book, *Governing Electronically*, e-government can be characterized as involving e-democracy, e-service provision, e-management and e-governance, and thus confirming the breadth of activities encompassed by this term (2010).

For different people, the term electronic government, or e-government may conjure a variety of images, from submitting a form online to sending an email message to an elected government official (Seifert & Relyea, 2004). In scholarly literature, e-government is often defined as the public organization’s use of information and communication technologies for the production and delivery of information and services (Fountain, 2001; Holden et al., 2003). The first, and current, official federal definition of e-government has been provided by the E-Government Act of 2002 (Section 2 of P.L. 107-347; 116 Stat. 2899):

The use by the Government of web-based Internet applications and other information technologies, combined with processes that implement these technologies, to (A) enhance the access to and delivery of Government information and services to the public, other agencies, and other Government entities; or (B) bring about improvements in Government operations that may include effectiveness, efficiency, service quality, or transformation².

Much like businesses with e-commerce, public organizations gradually began to embrace e-government. The evolution of e-government has been going through the same cycle as most commercial websites went through a couple of years before that. While there are similarities, there are also differences between government and commercial firms in terms of the goals and objectives for their websites. Since the early 1990s, electronic government initiatives have been understood as an innovation mechanism aimed at reaching greater levels of effectiveness and interoperability in the public sector. As Moon (2002) points out, because e-government has a potential to offer substantial performance gains, it is rightfully considered one of the core

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² 116 Stat. 2899, at 2902
elements of ‘reinventing government’ movement and administrative reforms at different government levels. It is widely known that the Internet-enabled “one-stop-shopping” portals and Web-based income tax collection practices have been very successful throughout the world.

However, as e-government evolves, it becomes capable of bringing about the benefit of e-governance that comprises the use of ICTs “to support public services, government administration, democratic processes, and relationships among citizens, civil society, the private sector, and the state” (Dawes, 2008). Thus, the most important question of the day is not only how information technology can help build a local government “that works better and costs less” as Al Gore once advocated for, but also how to use ICTs effectively so that they can empower the shift toward e-governance at all levels of government (Kamenski, 2001).

Most local governments have similar challenges to work on, including cultural, economic and social development, improving internal efficiency and effectiveness, collaboration, information sharing and integration, building a law-abiding state of affairs and promoting the atmosphere of good governance, such as citizen engagement and democratic participation. Among the priorities that the citizens normally assign to a local government, there’s a need for a more effective, modern and technological government that is less costly and capable of doing more. Since the early 1990s, information technology fully fits in with the concept of reinventing government, and cutting operational costs.

There is a philosophical saying about the need to think globally but act locally. With IT innovations and applications which continue to improve the quality and efficiency of service delivery to citizens, like Web pages, GIS applications, integrated justice solutions, improved customer service 24/7 and better data management, the traditional role of local government is being increasingly challenged. Today’s political and socioeconomic reality is multi-dimensional regardless of geographic locale, and it affects greatly the day-to-day life of local communities. Local governments, through information and communication technologies are now exposed to
forces, causes, connection and challenges that have never before touched their daily operations. Meeting new challenges require implementing new solutions, and these solutions in turn involve innovative use of advanced information and communication technologies.

**Thesis Layout**

The remainder of this thesis is organized into five parts. In Chapter 2, the researcher will discuss some essential multidisciplinary research on e-government encompassing a selection of extant literature on municipal website design and evaluation. As Chapter 2 addresses in greater detail, the phenomenon of ‘e-government’ is not particularly ‘new’, since computerized information technologies have been operating in government for decades and that the Internet and the Web-based technologies simply built on top of those earlier tools.

Chapter 3 explains why the combination of sociotechnical theory and maturational model of e-government innovation was chosen as a fitting theoretical foundation for conducting a historical case study research for this thesis. This synthesized theoretical framework allowed the author to better inform deductive coding as part of the final analysis of accumulated data. Chapter 4, in turn, presents an extended outline of qualitative research design and methodology, along with the detailed description of the data collection process that has been used for this research.

The following Chapter 5 provides a broad overview of the case, its key initiatives and activities carried out by various departments of the State College Borough government over the period from 1994 to 2011 that eventually led to, first, initial design and launch of the official municipal website in the late fall 1997, and then later to its sequential redesign projects. Much of Chapter 6 is made up of the analysis of data and the study findings.

The last chapter will then discuss the implications of this research and propose some future research needed for the area of municipal e-government.
Chapter 2

Review of Current E-Government Literature

It can be stated as a fact that electronic government aims at communicating information, delivering services, and offering additional avenues for interaction and participation. Since the late 1980s, innovations in information and communication technologies, and later the Internet and the World Wide Web, have indeed contributed to new forms of interaction between governments and citizens in the United States and abroad, particularly in the United Kingdom. As Ho (2002) pointed out, the adoption of these technologies at different levels of government has contributed to the emergence of e-government that sparked the “reinventing government” movement. This movement started as “an effort to reorient the focus of government operations from an inward-looking approach to an outward-looking one by emphasizing the concerns and needs of end users” (Ho, 2002, p. 435). Several researchers, mostly from the UK and Switzerland, explored the potential of information technology to transform local governments by making them more dynamic, entrepreneurial, efficient, effective, and responsive to citizens’ needs (Ho, 2002; Irani & Elliman, 2008; King & Cotterill, 2007; Polat, 2005; Schedler & Summerrmatter, 2007). King and Cotterill (2007) proposed a framework for a transformational local government which combines three different venues for reaching the goal, engaging with community and citizens, reshaping service delivery, and finding resources to make it happen. Irani and Elliman (2008) enhanced this framework by finding a way to fight inertia and culture of inefficiency by tapping into the spirit of social entrepreneurship in local governments in addition to active fostering the technological innovation potential within the public sector.
Many scholars interested in technological innovativeness of local governments observed that municipalities have widely embraced the Internet as a tool to inform their residents (Brown, 2007; Coursey & Norris, 2008; Ho, 2002; Moon, 2002; Streib & Willoughby, 2005). In the recent past, e-government activities have been primarily considered through the lens of two theoretical models, maturation and adaptation. Brown (2007) describes the maturational model as “linear, sequential, and hierarchical”. Since 2001, this model, currently largely accepted as an effective explanatory and predictive device to help understand e-government innovation, has been examined in a number of papers (e.g., Andersen & Henriksen, 2006; Layne & Lee, 2001; Moon, 2002). In short, the maturational model suggests that e-government innovations occur step-by-step over extended periods of time, and it also implies that higher degrees of maturity should signify greater benefits for both government agencies and their customers. Professional management, available organizational resources, and demographic characteristics influence the level of local e-government sophistication. Unlike the maturational model, the adaptation model allows for a transformational change that can occur abruptly, and thus may not be called linear or sequential.

In literature, the Internet has been widely hailed as a possible solution to many problems in public administration. Over the years, some scholars, like Fountain (2001), succeeded in creating a theory, which helps explain and predict the way e-government behaves. Fountain’s theory, the Technology Enactment Framework (TEF) offers an explanatory institutional perspective on use and effects of information and communication technology (ICT) on public organizations (government). Such perspective allows not only a thorough analysis of the influence of organizational structure and institutional arrangements on the use of, primarily, the Internet technology but also the actors’ perceptions and use of different ICT elements. According to Fountain (2001), technology plays three interrelated roles: (1) as a management tool, (2) as part
of infrastructure once it’s embedded within the organization, and (3) as a catalyst for organizational change. Fountain (2001) claims that states that heavily utilize ICTs become “virtual”, thus underlying significance of their impact on the system of state, citizens and organizations. At the same time, scholars like Dawes (2009) decided on developing a broader framework for e-government research and development, which incorporates relevance to the “themes of mission-orientation and assessment of the public value of ICT investments”; confidence that “encompasses themes of trust in e-government, personal privacy and identity, and information quality”; interoperability (i.e., cyberinfrastructure, ontologies, knowledge management), and innovation in traditional government structures and functions, including greater citizen involvement in decision making.

Some researchers, Ho (2002) among them, argue that the Internet represents a powerful transformation tool, which enables local governments to move away from the traditional bureaucratic paradigm of public service delivery to e-government paradigm. Just as he pointed out, two major paradigm shifts have been reflected in numerous local government web sites. While some web sites have adopted “information-oriented” approach driven by the concept of “one-stop shopping service”, other portals are driven by user-oriented design, which provides citizens “convenient and efficient access to needed information and services” regardless of the originating source of the data (e.g., different internal departments, or external community organizations).

That said, technical, organizational, socioeconomic and cultural barriers continue to undermine the development of e-government (Ho, 2002; Streib & Willoughby, 2005). According to a number of researchers, those barriers may include insufficient staff, lack of funding, as well as a persistent problem of digital divide. Some authors as (Dawes, 2008, 2009; Ho, 2002) outlined the most likely directions for reinventing government through the Internet usage, and proposed an action framework for e-governance, which “requires a new vision and determination
by government leaders to prioritize resources for technological change, a new approach toward organizing departmental operations that can be more cost-effective, and a greater social concern with the economic and racial disparities in the digital society”.

During the last decade or so, government reinvention along with the new public management (NPM) has driven a managerial reform wave toward market efficiency, entrepreneurship, and performance-based management in the public sector. Some scholars (Moon & deLeon, 2001; Moon & Norris, 2005) have come to believe, based on exploratory study findings on reinvention in hundreds of local governments, that successful outcome in case of adoption of municipal e-government is often determined by managerial innovativeness, government capacity (i.e., technical and financial capacity), and institutional characteristics such as size of a municipality and type of government. Their results suggest that reinvention values are widely held by chief city administrators, and various reinvention programs are diffused into many municipal governments.

Is there any difference among e-government, e-governance and e-democracy? According to Steven Clift (2003), the world-leading expert on e-democracy, they are all interconnected. The component sub-systems of e-democracy include e-government, e-voting and e-participation (i.e., using IT to enhance opportunities for dialog between citizens and government). Clift (2003) postulates that the goal for e-democracy is to promote “effective governance (i.e., executive policy making) include: (1) improved government decisions, (2) increased citizen trust in government, (3) increased government accountability and transparency, (4) ability to accommodate the public will in the information age.” In other words, all levels of governments can adapt their traditional off-line consultative practices (e.g., town meeting) to the digital environment and encourage online input from citizens, provided that “all online features must be designed with the end users in mind”.
Other researchers like Premkumar and his colleagues (2006) applied a framework for examining commercial websites to studying the evolution of e-government services, particularly in the context of city government. They conclude that, disregarding some similarities, local governments are more interested in delivering content and less focused on commerce much unlike for-profit firms. Furthermore, city governments are very eager to develop the 'community' dimension even if they had limited success at the time of the study. In this paper, it would be reasonable to raise the question about probable explanation of mediocre success of past attempts at Web-based public involvement, known as e-democracy. Scott’s paper (2006) contributes to better empirical understanding of the extent to what local government web sites support practical and meaningful e-democracy, especially because earlier empirical studies have been limited to reports on pilot projects, case studies, or special population surveys. In turn, Scott (2006) reports results of a recent comprehensive survey of official government web sites in the principal cities of the 100 largest U.S. metropolitan areas. In his paper, he examines whether and how U.S. city government web sites facilitate users’ involvement in local public issues.

In conclusion, the author could identify six themes in e-government literature that together help better understand this complex phenomenon: (1) developing theories and models explaining e-government adoption and development (Andersen & Henriksen, 2006; Damodaran et al, 2005; Fountain, 2001; Layne & Lee, 2001; Moon, 2002); (2) approaching e-government as a driving force behind the reinventing government movement (Ho, 2002; King & Cotterill, 2007); (3) interpreting e-government as technological innovativeness of local governments (Brown, 2007; Coursey & Norris, 2008; Ho, 2002; Moon, 2002; Streib & Willoughby, 2005); (4) providing comparative analysis of e-government initiatives at the national, state and/or municipal level based on survey research (Holden et al, 2003; Moon & Norris, 2005; Reddick & Frank, 2007). Streib & Willoughby, 2005); (5) suggesting different methods of government website evaluation (Donker-Kuijer et al, 2010; Downey, 2010; Premkumar et al., 2006); and (6)
examining potential impact of e-government adoption on the overall quality of governance, increased citizens’ trust in government and greater political efficacy (Clift, 2003, Dawes, 2008; Tolbert & Mossberger, 2006).

**The Key Research Question**

As the author pointed out in the previous section, survey research in e-government has been a predominant trend in recent years. Such research helps identify general trends, but it can’t supply context-rich data that are typical for qualitative investigations, particularly case studies. Although the body of research examining emerging trends of e-government innovation at the local level in the United States has been steadily expanding, it still remains relatively scant, especially in providing empirical analysis of e-government evolution in less populous areas (with total population less than 250,000), much like State College (PA) in the Northeast Region of the United States. Pennsylvania is comprised of 2563 municipalities (cities, boroughs, town and townships). There are 958 boroughs in Pennsylvania. Although State College is the largest borough in Centre County of the State of Pennsylvania, its population barely reached 42,034 as of the 2010 Census.

Practically all the local governments in PA now have an active website. According to the InternetWorldStats website, 77.8 percent⁴ of the state population were Internet users by June of 2010. Moreover, residents with the Internet connectivity have access to at least some information from and about their local government. Although State College is hardly one of the major metropolitan areas in the Northeast, it may be still an interesting choice for a case study because it is dominated economically and demographically by the presence of the University Park campus of the Pennsylvania State University.

⁴ [http://www.internetworldstats.com/unitedstates.htm#PA](http://www.internetworldstats.com/unitedstates.htm#PA)
In an attempt to fill this gap in empirical analysis of innovations in e-government in smaller municipalities in the Northeast, this research project, a case study of a complex socio-technical phenomenon, examines local e-government innovations adopted and implemented by the Borough of State College (PA) government as well as those that may be due for implementation in the near future. The research object in this case study is a borough government website, which is intricately connected to the web of political, social, and historical issues at the local, state and national levels. This scientific investigation aims to explore in greater detail how a well-developed government web portal could further the goals and priorities of municipal government from both perspectives, historical and sociotechnical. Empirical assessment of the maturational model of e-government innovation is one of the important research objectives. Also of interest is how the design and the website content have been shaped over the years in response to political, social and economic issues affecting not only a given municipality but a nation at large.

The study was developed to obtain data that could lead to probable answers and solutions to the following main research question:

Over the years, how have changes in organizational needs and understanding of the goals and priorities of municipal government, shifts in external political, socioeconomic environment, and the general public information needs and demands affected and shaped the design, online content and functionality of the Borough of State College government official website?

That research problem was further broken down into a subset of the related inquiries that were derived from a theoretical framework chosen to guide and inform this study (i.e., sociotechnical theory and the maturational model of e-government innovation):

- How closely did the State College Borough e-government adoption and implementation resemble the tenets of Chern’s principles of participative and recurring redesign, as well
as those of sociotechnical “nested components” of e-government configuration (i.e., technology, business processes, working practices, and public participation) which are currently considered necessary for successful implementation of local e-government?

- Did the State College Borough official government website development follow the path predicted by the maturational model of e-government innovation?

In the course of this research, the author had to obtain data to identify specific organizational and social factors that inspired the State College Borough government to make the initial decision about establishing official Web presence as well as key out factors that triggered subsequent recurring changes to its original design and web content. In view of the main research question, such issues as changing approaches to web content management over time and website usability from the standpoint of various categories of users (e.g., municipal staff, government officials and citizens) have also been investigated.
Chapter 3

Theoretical Framework

Why Sociotechnical Theory?

Contemporary challenges faced by local governments in the U.S. are complex and composed of deeply interdependent and interrelated social and technical elements where changes to one of them will affect the other. The introduction of Web 2.0 initiatives (i.e., Government 2.0) into this environment is expected to lead to innovation in the bureaucratic work processes, while simultaneously affecting the attitudes of local residents, encouraging political efficacy, greater civic participation, and increasing trust in government. Government 2.0\(^5\) can be defined as an attempt to integrate the social networking, podcasts, RSS feeds, and interactive tools of Web 2.0 like wikis, blogs, multimedia sharing, data mashups into the practice of government in pursuit of more effective ways of service delivery for individuals and businesses. Adoption of Government 2.0 is presumed to help governments provide information to citizens in a manner that is most useful to them. From the author’s standpoint, Government 2.0 should be considered the next iteration in the ongoing evolution of e-government.

As it was mentioned in the previous chapter, implementation of e-government innovations is often riddled with failures and/or limited successes. So it’s about time to find the way to fix this persistent problem with occasional lack of implementation success and underutilized potential of the latest Web technology in the local public sector. This study adopts a socio-technical approach to examining potential implementation of Government 2.0 by some local governments in the State of Pennsylvania. The official website of the Borough of State

\(^5\) [http://www.newworldencyclopedia.org/entry/Web_2.0#Government_2.0](http://www.newworldencyclopedia.org/entry/Web_2.0#Government_2.0)
College (Centre County, PA), history of its design and development over the years since it first went online in 1997, has been chosen as a testing ground for this case study research.

This study is primarily informed by socio-technical theory (STT) that is linked to the groundbreaking work on sociotechnical systems accomplished by Eric Trist and Fred Emery in the 1950s and 1960s. During that time, when they both worked as consultants at the Tavistock Institute of Human Relations in London, Trist and Emery, researchers with a background in behavioral sciences, have coined the term sociotechnical systems (STS), which emphasizes the importance of the interplay between technical and social sub-systems within an organization. Any attempt to change the technological and/or social sub-system must be considered as a joint-optimization action because of the interdependent relationship between the two sub-systems. To put it differently, successful systems require a perfect fit or seamless integration of technical and social sub-systems. The idea of equal blending of social and technical elements is very important for sociotechnical theory. One can say that the concept of fit along with the strong practical orientation can be described as the ‘superpower’ of this theory.

Trist and Emery have developed sociotechnical theory, which provided a foundation for conceptual and empirical work underlying employee involvement and work design applications in modern industrial society of the mid-twentieth century. STS approach to technological work design has spread to most industrialized nations in Europe, the USA and Canada in a relatively short time. Eventually, it has become synonymous not only with employee involvement with design process but also with promotion of a philosophy of participatory democracy, an open sociotechnical systems conceptual framework, and an action research methodology (Badham, Clegg, & Wall, 2000).

Sociotechnical theory can be also called sociotechnical systems theory because of its focus on the interaction between people and technology in complex organizations. It has three main independent constructs: people, technology, and tasks (Akbari & Land, 2005). In other
words, sociotechnical system design is based on a simple concept that an organization represents a combination of social and technical components, and it is open to its environment (Trist, 1981).

In traditional MIS literature, a sociotechnical system is representing an organization that needs to utilize new technologies to gain or sustain a competitive advantage (Bostrom & Heinen, 1977; Clegg, 2000; Trist, 1981). Sociotechnical principles and approaches make successful organizational change with respect to technology possible. This theory provides a redesign framework for self-regulated work groups, and, at the same time, facilitates the process of incorporating technological advancements into organizations.

However, other interpretations of what a sociotechnical system is are also possible. They come from literature on e-government as a sociotechnical system (Damodaran, L., Nicholls, J., Henney, A., et al., 2005; Damodaran & Olphert, 2006; Maxwell & Dawes, 2009; Sorrentino & Virili, 2003).

Some initial inspiration for the choice of theory for the study has come from a recent study of local governments in Great Britain undertaken by Leela Damodaran⁶ and her colleagues in 2005 (Damodaran, L., Nicholls, J., Henney, A., et al., 2005). This research emphasizes the crucial importance of applying a sociotechnical theory to the design and implementation of local e-government to ensure the effective participation of relevant staff, citizens and their official representatives in government in the articulation of the needs and in planning and development, and electronic delivery of services intended for use by local residents. As Damodaran and her co-authors (2005) point out, e-government similarly to any other successful sociotechnical system requires “simultaneous configuration of both ‘technical’ and ‘organizational’ and ‘social’ aspects of the system” (p. 7). Such configuration is depicted in Figure 3-1 below.

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⁶ Leela Damodaran, Professor of Participative Design and Change Management, part of the Research School of informatics at Loughborough University, UK
A number of researchers have outlined the way sociotechnical principles can be applied and implemented (Akbari & Land, 2005). In 1976, Albert Cherns was among the first to offer a set of sociotechnical design principles (Cherns, 1976), which were later updated by Chris Clegg to encompass the new Internet-based technologies (Clegg, 2000). Some of Cherns’ principles are still relevant today with respect to e-government design and implementation: (1) design processes should be compatible with desired design outcome, in other words, they should be highly participative; (2) organizational boundaries should not be drawn to impede the sharing of information; (3) redesign is continuous and requires review and evaluation. Chern’s principles echo much more recent ideas about sociotechnical requirements for successful implementation of local e-government, namely four “nested components” of e-government configuration: technology, business processes, working practices, and public participation.
Clegg (2000), among many other principles, emphasized the importance of integration of core business processes, which goes well with the notion of ‘re-engineering’ of business processes as part of implementation of e-government.

Figure 3-2: Elements of e-government Sociotechnical Configuration. Note: Figure adapted from Damodaran et al. (2005)

Figure 3-2 provides a fair representation of local e-government as a complex sociotechnical system. It is argued that for such a system to succeed all four nested levels need to be simultaneously configured (Damodaran, L., Nicholls, J., Henney, A., et al., 2005). That said, the researcher would argue that an image of a jigsaw puzzle is closer in spirit with sociotechnical theory than that of “nested elements”, since this theory brings to mind an iterative process of moving puzzle pieces (i.e., sociotechnical components of e-government) around before they finally click into place. Figure 3-3 below is intended to illustrate this point:
Sociotechnical theory provides a paradigm against which an implementation of Government 2.0 as well as issues related to sustainability of basic e-government service delivery could be better explored, understood, and put to work. This approach has the capacity to lead straight to identification of the dynamics between technology and the social and organizational environment in which it is used, and therefore the researcher becomes enabled to provide a detailed assessment of the existing sociotechnical system.

During the data collection and analysis phase of this research, the author was guided by the following diagnostic questions, which helped identify existing interaction among elements of e-government sociotechnical system:

Figure 3-3: “Jigsaw Puzzle” Components of e-government Sociotechnical Configuration
Technologies:

1. Was there a timely attempt to prepare staff for technological and organizational changes, e.g., through training and participatory decision making?
2. Was citizens’ input taken into consideration for e-government sociotechnical configuration at any time during the process of design/redesign and implementation?
3. What and where are the most important strengths and weaknesses between technology and the other elements of this e-government sociotechnical system?

Business Processes:

4. Did existing organizational structures encourage cooperation and collaboration, inter-departmental information sharing? Did some ‘re-engineering’ of business processes occur to facilitate implementation of e-government?
5. Was the Borough leadership supportive of impending changes e-government development?
6. What are the sensitive points that repeatedly cause friction, problems or conflicts?

Working Practices:

7. What are the major environmental factors that may influence successful implementation and sustainability of the system?
8. What cultural changes have taken place in the organization to facilitate e-government adoption and its further development?
9. What are the Borough’s government greatest strengths, or the best working practices?
10. What is the organization’s most critical weakness?

Citizen Participation:

11. What efforts have been attempted to identify citizens’ needs, to test different options aimed at achieving shared goals of e-government?
12. What is the basic attitude of various groups of citizens towards e-government?
13. Is there expressed dissatisfaction with the present state of e-government implementation that can become a motivational basis for change?

14. What efforts have been made to encourage active citizen participation, increase their awareness of and trust in existing e-government system and services?

The Maturational Model of E-government Innovation

Over the past decade or so, local government in the United States have adopted and implemented e-government as a means to delivering public information and online services. Sociotechnical theory, outlined in the previous section, provides a tool to help understand how different elements of e-government system should fit together. However, this theory alone does not determine the road ahead for either municipal government officials or for researchers examining the ways e-government phenomenon really works. Another tool called a maturational (or maturity) model can be used. In the early 2000s, Phillip Windley, Utah’s Chief Information Officer at the time, defined a maturity model, in its simplest form, as “an enumeration of attributes for a sequence of maturity levels” (Windley, 2002). That is reasoning behind the researcher’s choice of a second theoretical tool, the maturational model, which has been largely accepted since 2001 as an effective explanatory and predictive device to help understand e-government innovation.

A number of maturity models for e-government have been proposed and extended upon by both institutions and individual researchers (e.g., Andersen & Henriksen, 2006; Layne & Lee, 2001; Moon, 2002; United Nations DPEPA & American Society for Public Administration, 2002). As it’s mentioned in Chapter 2, the maturational model suggests that e-government innovations occur step-by-step over lengthy periods of time. It also implies that higher degrees of maturity should signify greater benefits for both government agencies and their customers, while
professional management, availability of organizational resources, and invigorating demographic characteristics positively influence the level of local e-government sophistication. A maturational model is primarily based on website content, availability of interactive features (e.g., email), quality and timeliness of information, and the website capacity to conduct online transactions.

At the basic informative level, local e-government normally provides factual information about government operations and services (e.g., demographics, official contacts, press releases, employments opportunities). Beyond this basic level, local governments can seek higher levels of e-government paradigm by allowing citizens to interact and communicate with government officials (e.g., email, downloading documents as a form of self-service, access to various forms online), and conduct online transactions (e.g., rental permit application).

However, based on the citizen-centric approach to e-government, there is a growing anticipation in scholarly literature for reaching the next step in modeling this sequential progression. This next step is expected to lead towards a more advanced level of citizen participation that goes beyond just providing feedback and comments, but implies actual involvement in the process of policy development and government decision making, at the municipal level as well as other levels of government on the national and international arena.

Although the number of e-government stages or even their names may vary slightly (four- to five-stage) from one version to the next, there is a good consensus among this various interpretations of the maturational model of where e-government is headed.

In 2002, the Division for Public Economics and Public Administration of United Nations (UNDPEPA) in collaboration with the American Society for Public Administration (ASPA) suggested a maturity model that consists of five stages of e-government sequential development: (1) emerging web presence with limited and static information, (2) enhanced government website with dynamic, specialized and regularly updated information, (3) interactive website that allows a two-way communication between users and government service providers, (4) transactional
website that has a capability to conduct complete and secure online transactions, and (5) seamless, which implies full integration of e-government services into a “one-stop” portal (see Figure 3-4 below).

Figure 3-4: Stages of e-government: the maturational model. Note: Figure adapted from the UNDPEPA & ASPA report, Benchmarking E-government (2002)

**Why Do These Two Theoretical Tools Go Together?**

The field of e-government research is still quite new and gaining momentum with impressive speed. Models (e.g., e-government Adoption Model (GAM), maturational model), concepts and theories of e-government keep developing, because researchers from different
disciplines, from information science and management information systems (MIS) to political science and public administration, conceptualize this phenomenon from a variety of perspectives including social, technical, economic and political. At present, no single process oriented e-government theory can do both, explain the sociotechnical nature of e-government innovation and, at the same time, predict how an individually undertaken e-government project, seen as an iterative dynamic process, would develop from the beginning stages of its adoption and implementation forward.

The theoretical framework of this study is based on two relevant theoretical tools (sociotechnical theory and the maturity model of e-government innovation) that were discussed earlier in this chapter. Within the constraints of a historical case study research, a synergistic combination of sociotechnical theory and the maturational model of e-government innovation allows the author to make a plausible explanation of how various elements of the sociotechnical system not only fit together but make steady progress in an evolutionary, step-by-step fashion from initial launching of an information-driven website through fully executable online service delivery, beneficial for both government and its constituents, and, eventually, to reaching a greater maturity level of participatory, collaborative government and e-democracy.

In summary, sociotechnical theory and the maturity model of e-government innovation are seen as complementary, and, if engaged together, should lead to a more sophisticated understanding and more precise prediction of patterns in e-government adoption, its implementation and development at the municipal level. Such synergistic combination of sociotechnical theory and the maturity model may be juxtaposed with two sides of the same coin: one theory explains the process of making all components in a sociotechnical system fit together in perfect harmony, while the other one sheds light on steps along the path already taken and points toward (i.e., predicts) the road that lies ahead.
Chapter 4

Research Design and Methodology

Overview of Research Design

To focus more directly on the social and organizational dynamics, this study primarily used the historical case-study research approach to develop a process-oriented view of the prospective e-government portal redesign defined by a greater emphasis on political outreach and promotion of e-participation among the Borough of State College residents. Such approach also allows for a better understanding of theoretical and historical significance of the anticipated evolutionary stages in the development of the State College Borough government website.

The study examined the original design and consequent development of an existing web portal in the effort to establish a strong case for potential improvements or even redesign of the existing website. The historical case data represent the time from the initiation of the e-government project in 1997 to March 2011. The case study analysis was intended to treat the local government web portal as a socio-technical phenomenon embedded in an emergent process of change in e-government environment, which includes not only the Borough government elected officers, administrative and IT municipal staff but also a greater community of the web portal users, residents the Borough of State College and the Centre County, the multinational student body of the Pennsylvania State University at the University Park campus, but also more geographically distant users from around the nation and the world at large.

It's well known that a case study method relies on qualitative data collection and analysis primarily because it enables acquisition of context-dependent data from the insider’s perspective of selected participants within their respective organizational environment. In this case,
participants were expected to have been active in making decisions related to the original website
design as well as consequent redesign projects, in addition to being involved in providing and/or
updating the site’s web content on the regular basis. Since the goal was to seek in-depth
understanding of a dynamic, complex, and multi-faceted phenomenon, I used this method in
conjunction with the web content analysis supplemented by data from the ICMA’s National
Citizen Surveys conducted by the Borough employees in the past three years (2008-2010), which
have given voice to a broader, more representative group of local citizens and casted some light
on their needs and perceptions of e-government performance. The results of the National Citizen
Surveys have become an important component of the overall research design because the web
portal’s primary goal is to provide government information, services, and opportunities for civic
engagement for all local residents. The researcher also used website evaluation as a
complementary analytic tool to help assess change over time by examining web content quality
and organization, functionality and availability of online services, in addition to availability of
such advanced features as guaranteed support of user participation in a chat room or e-townhall,
or live video streaming of events.

Semi-structured personal interviews were conducted over a 4-week period in February-
March 2011, and became the primary data sources, along with available web logs for 2008-2011,
the Borough’s archival data and documents as supplementary sources. The sampling strategy for
the interviews included a combination of snowball and quota sampling. A snowball method of
sampling allowed a researcher to approach preliminary identified contacts and ask them to recruit
additional interviewees from among their acquaintances, former and current colleagues. The main
selection criterion of the study participants was their current or past affiliation with the State
College Borough government, as well as their contribution to design, implementation and
consequent management of the website. The majority of participants were current and former
employees from various departments in this municipal government (e.g., Administration,
Information Technology, Police, Planning, Ordinance Enforcement and Public Health) as well as the Borough’s elected officials. However, a snowball method of sampling has directed the researcher on occasion to seek interviews with people outside the Borough’s employment rolls. It happened once when the researcher uncovered the fact that the original website design and implementation was done by a volunteer who worked for the Police Department at that time, in the mid-1990s. Each of the individual interviews has lasted no longer than an hour.

While qualitative research methods such as interviews and content analysis yield context-dependent data from the perspective of the participants within their organizational environment, quantitative data (e.g., web log records) for measuring social characteristics also exist, and were used in conjunction with qualitative methods to strengthen robustness of data through triangulation.

Data Collection

Semi-structured individual interviews, consisted of 25 open-ended questions, were used as a primary data collection instrument during the initial phase of this case study which was mostly conducted in February-March of 2011. Open-ended questions made it possible to collect data that were more easily analyzed and compared at a later stage in the study. Conducting interviews as part of historical research could be challenging because the interviewer is driven to rely on alleged accuracy of interviewees’ recollections of facts and events of the past. To mitigate this dilemma, the author chose to email a copy of the questionnaire to the study participants prior to the scheduled interviews so that they could check their records, or refresh their memory in any other way they felt comfortable with.

The construction of interview questions (i.e., interview protocol) was largely informed by the theoretical framework chosen for the study and based on thorough examination of current
issues related to municipal e-government innovation which were raised and discussed in the prior survey research and other academic studies (see Appendix C for more details). The interview protocol has been approved by the author’s academic advisors and by the Penn State’s Office for Research Protections. The author is compelled to point out that the approved questionnaire was useful and conducive to collecting valuable qualitative data. Still, reflecting upon the originally approved data collection instrumentation and enlightened by the 20/20 hindsight vision, the author can see how questions could have been better phrased to facilitate and clarify their intrinsic connection with the underlying theoretical framework.

All the interviews were predominantly guided by the pre-approved interview protocol, which was designed to ensure that the same predetermined areas of information were collected from each interviewee. However, interviews are well known to be exceptionally useful for getting the story behind participants’ life- and work-related experiences. Consequently, during most interviews, the author was keen on allowing certain flexibility, on keeping open conversation flowing and remaining adaptable to unexpected interviewees’ insights. Considering uniqueness of job expertise of a number of study participants (e.g., the first web designer, the Mayor, the Borough Managers), the actual interview questions have been modified on occasion to best accommodate the interviewees’ depth of knowledge in specific areas of interest and personal experiences. Significant points or emerging themes arising from analyses of transcripts were further explored during consequent email correspondence with key informants.

A total of twelve (12) interviews were tape-recorded and transcribed for content analysis. The researcher asked about the interviewees’ involvement in the initial design and implementation of the web portal as well as current developments and plans for the future. During and after the interviews the researcher kept soliciting pertinent documents and archival data (e.g. Council minutes, relevant committees’ documentation, contracts, plans, memos) to reflect on the
legal and policy environment, technological objectives, and other issues related to the e-government project in State College.

In order to improve reliability, the researcher reviewed all the interview transcripts more than once for purposes of comparison and factual consistency, in addition to comparative analysis of the municipal archival materials that were made available upon request.

Data Analysis

Once the data has been collected, it was coded based on both deductive and inductive methods of coding. The codes were constructed so that they could highlight different elements of e-government sociotechnical system: technological, organizational (business processes, working practices) and social (citizen participation). Some codes, such as barriers to e-government initiatives and e-government benefits have been identified and chosen because they are representative of the most commonly posed questions in the recent ICMA’s E-government biennial surveys (2000, 2002, 2004), which were traditionally used for data analysis in nearly all quantitative research studies on municipal e-government (e.g., Reddick, 2004).

Some researchers examining e-government implementation among local governments point toward a few predictors and/or criteria that have been utilized for coding purposes in this study. For example, a content analysis of municipal websites has found that too much information without much of a focus can be “cluttered, daunting and overwhelming” (West, 2004, p. 10), therefore suggesting that a level of professionalism, the “look and feel” of a website can easily be turned into the “ease-of-use” criterion for the public, or professionalism and public outreach code applied to data analysis in this study. Moon and Welch (2005) second this opinion by pointing out that the top priority of both citizens and government employees should be making website
information as understandable and easily found by the public as possible because it leads to stronger public outreach.

On the other hand, the coding procedure was especially important from the standpoint of tracking down different technological, organizational and social events in the history of adoption and implementation of the Borough government website over the last 17 years (1994-2011). Having said that, it should be evident why a number of inductive codes for analyzing data, such as The Country Store, CivicPlus, The Technology Committee, represent a direct result of careful interpretation of numerous pages of transcribed interviews with current and former Borough employees and elected officials.
Chapter 5

Case Description

Background

The Borough of State College is the largest borough in Centre County of the State of Pennsylvania. Recently, the U.S. Census Bureau has released basic population data from the U.S. Census 2010 for municipalities in Pennsylvania that point towards an increase in population for State College between 2000 and 2010, from 38,420 to 42,034, or 9.4 percent change, which is more significant than that for the entire state for the same period of time (see Table 5.1 below). To compare, the entire population of the State of Pennsylvania has increased considerably less, by only 3.4 percent in the last 10 years.

<table>
<thead>
<tr>
<th>GEOGRAPHIC AREA</th>
<th>2010</th>
<th>2000</th>
<th>Change: 2000 to 2010</th>
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<tr>
<td></td>
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<td>Population</td>
<td>Number</td>
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<td>421,325.00</td>
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<td>135,758</td>
<td>18,232</td>
</tr>
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<td>Centre Region</td>
<td>92,096</td>
<td>79,406</td>
<td>12,690</td>
</tr>
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</tr>
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</tr>
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<tr>
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<td>11,420</td>
<td>3,891</td>
</tr>
<tr>
<td>State College Borough</td>
<td>42,034</td>
<td>38,420</td>
<td>3,614</td>
</tr>
</tbody>
</table>

Note: Data adapted from the Borough of State College government website (http://www.statecollegepa.us/index.aspx?NID=1321)
According to the CQ Press’ 2008 edition of its "City Crime Rankings", State College Borough is the second safest metropolitan area in the nation, following directly behind Logan in Utah (Murphy, 2008). This fact appears to be particularly significant because the State College Police Department’s extraordinary efforts to keep the community safe have been always enhanced by its dedication to early adoption and implementation of a variety of information technology tools since the early 1990s, like using hand-held computers in police patrol cars.

As it was previously mentioned in Chapter 2, successful outcome in case of adoption of municipal e-government often depends on managerial innovativeness, technical and financial capacity of local government, and its institutional characteristics such as the municipality’s size and government type. It would be clearly demonstrated below that all these factors have indeed played a significant role in successful e-government implementation in the Borough of State College.

Based on the Home Rule Charter of the Borough of State College (1976), the Borough is governed by a "council-manager" system in which the mayor has only a few powers, while the borough council, as a legislative body, has very broad appointment and oversight, including appointment of the Municipal Manager for an indefinite term, who therefore becomes the Chief Executive and Administrative Officer of the Municipality. Thomas J. Fountaine II is currently serving as the Borough Manager since Fall 2003. As the Borough Manager, Tom Fountaine was preceded by Peter Marshall, who had 40 years of experience as a municipal manager in the United States, including his 17-year tenure in the Borough since 1986.

The majority party elects council president every two years. Based on the 2009 election results, the 2011 State College Borough Council has Mayor Elizabeth Goreham as Presiding Officer, and Ronald Filippelli as its President. In fact, Mayor Goreham has been first elected to the public office back in 1997, and served three consecutive terms on Borough Council. It was during that time that the Borough Government has first found its home on the Web.
At the regional level, the Borough of State College is a member of the Centre Region Council of Governments (COG), which serves as regional planning agency and a forum for debating issues of regional importance; while at the federal level, it forms part of Pennsylvania’s 5th Congressional district.

**Key Projects and Activities**

Initially, this municipality started to get engaged in use of computer technology primarily to assist with business processes. In the mid-1990s, the Borough of State College government (the Borough), as an organization, became more involved in deploying computer technology to help with decision-making processes and recordkeeping. Back then, there was no technology department in the Borough. In 1994, only the Police Department had a computer network, which served primarily to support the CRIMES database. At that time, the Police Department decided to fill a position of a Data Processing Manager and hired Marge Johnson, who soon became responsible for computer support for the entire organization, not just the Borough police. Marge Johnson and later her assistant, Jan Hess, both worked closely with the Police Department, and were the only technical staff on board capable of managing a great deal of technology-related matters in the Borough. However, “they didn’t establish a formal IT department and task that group with the IT function until 2001” (personal communication, March 8, 2011). Tim Grattan, who joined the Borough as the IT Director in 2001, has been immediately mandated to start an IT department that was formally required to manage information technology in the municipality.

Back in the early 1990s, the Borough had four major computer systems, such as the Tax System, the CRIMES database, the property records management system, and a number of stand-alone outdated PCs in operation. The Borough’s information systems were not interconnected,
and therefore those systems could not support information sharing among departments such as Administration, Planning/Health, Police, Finance, Public Works.

In February 1994, the former Borough Manager, Peter Marshall, has created a Technology Committee with the representation from all the departments, which happened to be a truly savvy executive move since “all the individual departments then bought into technology because they all had a part in it” (personal communication, March 9, 2011). The Technology Committee played a critical role in convincing the entire Borough’s staff, from top to bottom, as well as the State College elected officials that emerging information technology had benefits, explaining what the benefits were, and persuading them to take full advantage of these benefits by timely adoption and implementation of a number of technology projects suggested by the Committee.

According to Carl Hess, Planning Director since 1998 and the first Technology Committee Chair, that Committee has been “tasked with exploring potentials for usage of computer technology in generic terms and to ensure coordination among the departments as they began to come up with ideas and attempted to deploy and use technology” (personal communication, March 10, 2011). Among the goals that the Technology Committee wanted to implement was starting to utilize the Internet as the way to communicate and disseminate information to the community. In fact, creation of this committee allowed not only to address some pressing technological needs (e.g., creating a “core” computer network for the Municipal building by 1995; installation of file servers and upgrading existing computer equipment to current technology; implementing standards for future systems acquisition including desktop PCs, network operating software and network topology for high bandwidth applications such as imaging or GIS, major application software packages; and, finally, formalizing the IT training

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7 Marge Johnson headed the Technology Committee since 1998
process for technical and user personnel) but also to take some dynamic steps to making those needs met.

Starting in July 1994, the Independent Consulting Associates (ICA) from Shrewsbury (PA) have assisted the Borough with the determination of a government-wide strategic direction for information systems (IS) in order to ensure compatibility among computer systems purchased by individual departments while allowing them flexibility in addressing their unique needs. The Technology Committee’s findings along with the ICA recommendations were detailed in a comprehensive report\(^8\) that came out in September 1994. Together, the ICA and the Technology Committee have identified 18 projects to be implemented from 1995 through 1999 including the most important one of all, implementation of a networked IS architecture designed to address most of the common needs identified in that report and provide access to email and the Internet.

According to the final report, the Technology Committee has assigned a high priority to three projects: installation of the Core Network, replacement of the Tax System, and design of Central Property Records System. By 1995, five projects have been already “on the drawing board” including important initiatives as replacement of the outdated Wang Police LAN operating system, LANtastic, with Novell NetWare and acquisition of a Geographic Information System (GIS) intended to be used by many Borough departments for either identifying shifts in criminal activity, or for storing land parcel ownership, zoning regulations, land use and natural hazards.

Although the need for designing an official Borough website has never been openly stated in that report, some other information technology projects effectively demonstrated a growing organizational determination to increase efficiency of the back-office operations, reduce paperwork and data tedious entry, decrease time demands on staff, boost quality of information, provide the ability to share information among multiple users, and, the most important of all, to

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improve public service, the front end of the municipal government activities. Just to name a few to top the list would be implementation of the networked IS architecture as well installation of a computerized system, Interactive Voice Response (IVR). Such system, which was created to enable outside callers to access computer-based information or listen to prerecorded announcements by using their touch-tone phones to select from a variety of menu options, could easily be called an immediate predecessor of an initial information-driven e-government portal.

One of the first major accomplishments was installation of the Novell Borough-wide Local Area Network (LAN), facilitated by the local company, Computer Link in Altoona (PA). It has been completed sometime in 1995, or by early 1996 (personal communication, March 9, 2011).

On February 27, 1997, in the Interoffice Memorandum on Technology Committee Recommendations, the Borough Manager at that time, Peter Marshall, reported “substantial progress on implementing 3 of the 6 major system improvements listed in this plan: 1) installation of the core network; 2) replacing the tax system; and 3) replacing the police minicomputer system” (see Appendix D). In the same memo, Peter Marshall commented on some new and exciting news related to Internet access and the upcoming project of “getting the Borough up on the Country Store” which has been inspired by the prior meeting of the Borough management with George Thurman in 1996.

Later this year, on May 16, 1997, Peter Marshall stated in his memo to Carl Hess that the Borough accepted RBA’s proposal for an Internet email connection using the SMTP (Simple Mail Transfer Protocol) option, which was meant to allow staff “to send and receive email to locations outside of the municipal building using the Internet” (see Appendix E, Technology

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9 Strategic Direction for Information Systems, a comprehensive plan prepared for the Borough in 1994 by ICA
10 George Thurman, Penn State Public Broadcasting, currently retired Director of Technology;
11 RBA Professional Data Systems, a company which operates in the commercial computing environment and is located in State College (PA)
Committee Recommendations). It is evident from this memo that the final decision on full Internet connection was yet to be made. Nonetheless, in the spring of 1997, the Borough has in fact obtained limited access to the Internet that allowed staff to use email. The email address back then was boro@statecollege.pa.us, and it remains the same to this day.

The next project to come about was design and development of the Borough’s own official web page, thus allowing to make a transition from maintaining a web page on the Country Store site to securing for the first time primary real-estate presence on the Web, http://www.gov.state-college.pa.us. Shortly thereafter, by the fall of 1997, such HTML-based web page has been internally designed, developed and hosted by a company named LazerPro. Some unexpected help with the initial web page design came from a Penn State student (who remains anonymous) and then a technologically savvy volunteer with wealth of prior experience in information systems and web development. Her name was Elizabeth (Kiki) Phillips, and she worked primarily for the Police Department under the supervision of Marge Johnson. Later on, there was a person on staff in the Administration Department who knew HTML enough to do coding, and that’s how the website was maintained between 1997 and 2005.

An objective confirmation of a somewhat tentative fact of the Borough’s website launch in the fall of 1997 can be found in the memo on pending and proposed projects that Carl Hess, Planning Director, sent to the Technology Committee members on January 29, 1998, where he mentioned such urgent technological needs as improving the Borough’s home page (1998 and beyond) and putting forms on the Internet (i.e., home page) (see Appendix F). In the spring of 1998, the Borough sent out a newsletter to State College residents informing them about the newly launched official municipal Web portal and urging them to take advantage of free electronic government information, inquire about job opportunities at the Borough, get a copy of an agenda to learn more about the topics of discussion for the next Council meeting (see Appendix A).
At first, as it was stated over and over again in many digitally recorded interviews, the website “was really a way of getting our ordinances out there, getting information to people we felt people would be interested in, getting agendas published, those kinds of things. It was more a one-way communication” (personal communication, March 10, 2011).

The period between 1997 and 2001 was rather static in terms of technological innovations in the Borough. However, as time went by, and the Web continued to grow in popularity, the IT Department established a Help Desk for IT technical support, installed infrastructure (i.e., dedicated fiber connections, dedicated Internet access). By 2002, “all the employees at the Borough started to use the Web as a tool to connect with the outside world, more than just email. And [the Web] started to become a tool that a lot of employees were using on a regular basis” (T.Grattan, personal communication, March 8, 2011).

Although the Internet has evolved dramatically since 1997, the website remained pretty much unchanged until 2005 when the Borough eventually transitioned towards the content management software approach, which was accommodated by the company called Civic Plus. In 2003-2004, a special committee with representation from each department, organized by the IT Department, carried out a 2-year redesign process. By the end of this period, the original HTML-based website has become severely outdated and cumbersome to maintain, especially considering considerable lack of technically skilled staff and insufficient training which could enable them to easily update information on the Web (personal communication, March 10, 2011). In 2005, the redesigned website could offer added functionality that allowed the municipality to get information back from the community with much more finesse, people could find forms online, fill them out and send them back to the Borough, or they could use a comment space on the Web to pose a question or leave a comment.

However, even in the aftermath of transition to the content management system, the website still needed improvement, as it remains true to this day. There were some indications that
end users both internally and on the outside were not satisfied with the poor quality and the “look and feel” of the website:

We were getting feedback that our website was not particularly user-friendly, not particularly attractive, and not particularly useful because it was hard to find things online. And we were not keeping up-to-date very well (Personal communication, March 10, 2011).

In response to such negative feedback, there has been a number of temporary “brainstorming” committees formed in 2008-2009 in order to discuss a variety of issues related to redesigning of the Borough website. However, nothing worthwhile has happened yet. During that period, some consideration has been given to possible applications and uses of social media, primarily Twitter and Facebook.
Chapter 6

Analysis and Findings: History and Milestones of the Borough of State College Website Project

Critical Role of the Internet: Evolution of the State College Borough Website

Although the web page went live in approximately September 1997, the historical precursors of the Borough of State College government portal can be traced as far back as 1994, primarily through the invaluable recollections of the Borough’s staff. Some most important evolutionary milestones in its 17-year history are depicted in the timeline shown in Figure 6-1.

Figure 6-1: Sociotechnical Milestones in the Evolution of the State College Borough Government Website
As it is illustrated in Figure 6-1, some organizational changes that started to occur in 1994 have been necessary and played a critical role in making development of an official Borough website possible in a relatively short time thereafter. To move forward, the Borough had to overcome a number of technological, organizational and social barriers. On the technological front, the challenges were clearly identified by the Technology Committee that has been formed in February 1994. Lack of infrastructure and Internet connectivity made it to the top of the list of findings and recommendations prepared by the Technology Committee along with the consulting firm that has been previously invited to help formulate a comprehensive strategic plan of the sweeping technological renovation in the Borough. As it was succinctly summarized by the first IT manager the author had a privilege to interview, “in the general scheme of things, what was needed in order for that web page to happen was, first of all, [1] to get more computers available to everybody in the Borough, [2] to network those computers, [3] link them to the Internet, and [4] then develop a web page” (personal communication, March 9, 2011).

As sociotechnical theory suggests, the best results in bringing about a successful technological change in an organizational setting could be achieved if staff is sufficiently prepared for upcoming transition by means of participatory decision making and through adequate training. From this standpoint, having all the departments involved in the step-by-step multi-project management through their continuous participation in the Technology Committee, from their conceptual inception to discussions of final installation details.

From the organizational perspective, lack of technical personnel evidently presented one of the major challenges for the Borough. Until 1998, Marge Johnson, the Data Processing Manager in the Police Department, was the only information systems person on staff.

The Borough had to triumph over a number of social challenges including staff resistance to change and initial inability to fully acknowledge far-reaching advantages of adopting and using new technologies. During one of the interviews, an informant recalled an interesting story about
the first time the State College municipal employees were given permission to use their email accounts: “I remember somebody in the Administration Department who wondered why we needed email, and what use it was going to be except for, maybe, emailing out spouses” (personal communication, March 9, 2011). The author heard a number of similar references about the common lack of understanding of potential advantages of using new technology both among the Borough employees and Council members, as well as about their reluctance to embrace the Web as a more advanced tool for doing business. With countless sweeping changes that the Web brought along during the past decade, it could have been sensible to assume that such reluctance would pass in time. However, it’s more likely to suggest that for some people, such resistance to change never really goes away; it simply floats towards some other emerging technological phenomena like Twitter, or Facebook. Here is another comment that confirms the author’s observation:

There is this proposal from Penn State for a downtown State College. It’s a proposal to do some kind of a citizen’s portal in Downtown State College. We have one of our Council members say: “This stuff, like Twitter, is just the waste of time”. And our Council is not necessarily forward thinking when it comes to use of the Internet. They have not really stopped us from doing anything. It’s not that they are throwing roadblocks. It’s just they are not coming to us and saying: “Hey, we gotta be able to do this”. If we go to them with ideas, they are receptive, in general, but they are not knocking down the doors asking us to get that website updated. They are really not. (Personal communication, March 10, 2011)

According to Council minutes¹², local residents of State College and Centre County first experienced the benefits of having “inexpensive access to local and world-wide information and services” in November of 1995 via the countywide computer network called the Country Store which emphasized its underlying “concept of sharing information about people and having access

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to a lot of different things” (personal communication, March 9, 2011). Residents were able to connect to the network in public locations such as the county’s libraries as well as from their home personal computers.

To sum it all up, the author is inclined to hypothesize that historical development of the Borough’s website, which has been primarily linear and sequential thus far, is consistent with parameters set out by the five-stage maturational model of e-government innovation (UNDPEPA & ASPA, 2002). By comparing a number of known facts and features pertaining to the Borough website at different periods in its development and characteristics of maturity levels identified by that model, the author finds remarkable similarities. As illustrated by Figure 6-2 below, certain events in history of the Borough website seem to accurately correspond with a specific maturity level, in like manner of e-government advancement phases predicted by the model. However, the two middle stages, enhanced and interactive, tend to overlap in time, and thus it is difficult to place them chronologically with greater accuracy.

![Figure 6-2: Maturational Model of E-government Innovation in the Borough of State College](image)
The Country Store as an Impetus for the Borough’s Website

There have been several milestones in the history of the State College Borough government website, from the early 1990s to present. Among the most significant events was the Country Store project because the Borough’s website could be described as a spinoff of the Country Store portal.

The Country Store, as a non-profit organization, represented a partnership of Centre County’s key organizations and institutions that has been driven by the goal to connect the general public, government, civic, educational and social service agencies within and beyond Centre County. As a charter member of the Country Store, the Borough was entitled to board membership and reduced-cost or free access to some planned services. Back then, Marge Johnson, the Borough’s Data Processing Manager, served on the Board of Directors of the Country Store along with George Thurman, the first President of the Board, who worked for Penn State at the time.

Initially, the Borough “rented” a space on the Country Store website, which eventually prompted the Borough administration to start its own web page. According to Marge Johnson’s recollection, in the spring of 1997, the Borough started to provide help with web design “for those who didn’t yet have a web page”, and the Borough itself was among those who needed a Web presence as well. By many accounts, George Thurman’s enthusiasm about new and emerging technologies was instrumental in promoting the advantages of the Internet around the Centre County and setting up the scene, first, for the Country Store website, and, later on, the official municipal page itself. He had contacts with students, and “offered the services of students to help people develop their web pages; the Borough was willing to go along with the website project because the Country Store was willing to help us get the web page started” (M. Johnson, personal communication, March 9, 2011).
It could be a plausible hypothesis to suggest that, initially, networking the Centre County, and then successful implementation of the Country Store project provided the “missing link”, and overdue encouragement to look around the country to see what other people were doing on the Internet. This hypothesis got confirmation from the first Director of Information Systems, Marge Johnson, when she shared her perception of the Country Store project as something that “got us to get the ball rolling because we had an impetus to do it because the rest of the county was doing it, and we had to have our Web presence also” (personal communication, March 9, 2011).

Peter Marshall, the Borough Manager in the mid-1990s, also emphasized the importance of national municipal managers conferences that played an important role in promoting emerging best practices in e-government innovation.

And that’s how the Borough home page started, as an emerging web presence (or the first stage in e-government in the maturational model) with express intent to disseminate information, educate local residents, and, eventually, develop better communication with constituents. Most informants have generously shared their vivid recollections and valuable information about the humble beginnings of the website during the case interviews:

Every department had books of codes, ordinances and regulations. And that was the initial stuff that we put initially on the Web. And there were links to each department, and then you could read all the rules about trees, and all the rules about sidewalks, and all the code requirements for every little thing. So that was the initial thing: here is what you need to know and we hope that you’ll come here and look at it and read it so that you stop calling us, and stop complaining when there is a violation.

There was nothing interactive. You have to remember that time too: not everybody had a computer; certainly not everybody had an Internet connection. Those who had Internet connections had dial-up connections, and they were very slow. And most of the Borough Council members did not have Internet connections, or email (personal communication, March 16, 2011).
With some help from a Penn State student who set it up, scanned the Borough’s logo, and provided an outline of the way pages might have looked like. Later in 1997, a volunteer web designer (who previously employed by the HRB Systems Inc.), assigned to work with the Police Department, Elizabeth (Kiki) Phillips, “took the logo from the student and the ideas the student has provided, and created the web page, set up the links” (M. Johnson, personal communication, March 9, 2011). Based on information shared by Kiki Phillips, request for putting together that website came directly from the Borough Manager at the time, Peter Marshall, and it happened to be the only paid project she had ever done for the municipality. A lot of initial design work was done before the website went online. Once it went live, the departments kept on putting together relevant web content data they wanted on that were later transferred to Kiki Phillips on floppy disks, so that she could put the links in, add HTML coding and then upload new pages onto the Web. “So it was a work in progress”, as Elizabeth Phillips accurately observed during an interview (personal communication, March 16, 2011).

By the Fall of 2003, when the new Borough Manager came on board, it was still “an HTML-based website that was fairly centralized, and it was only 1 or 2 staff people here that had the ability, the knowledge to make changes and keep the website updated. In terms of filing applications online, in terms of making payments online, any of those kinds of activities were not permitted: there was no mechanism for residents at that time to submit questions or comments online through the Borough’s website” (T. Fountaine, personal communication, February 25, 2011). In other words, the website hasn’t reached the transactional stage in its development at that time. As a newly appointed chief administrative officer of the Borough, Tom Fountaine was determined to start exploring ways of doing some things internally that would make the website more useful and more helpful to primarily residents but also to visitors and the community.

Picture 6-3 below provides a glimpse into a “look and feel” of the website at that early stage and beyond.
As it was stipulated in the previous chapters, the intent of this case study is grounded in using explanatory and predictive powers of two distinct yet complementary theoretical tools, sociotechnical theory and maturational model of e-government development, to help explain (1) the possible fit between various sociotechnical elements of the Borough website and (2) to trace...
the historical development of this municipal e-government portal over 17 years of its existence to find out whether that process was congruent with the maturational model.

Analysis of collected data could lead to just one conclusion about the municipal government primary intent for launching the first official web page, and that goal was to improve the process of disseminating information to the general public, which, thus far, confirms the maturational model. During the first 4-5 years since the website went live, there were no major changes, “every department kept their own information up-to-date, and, other than that, we started talking about interactions, not only putting information out there, but how we can get feedback from people” (M. Johnson, personal communication, March 9, 2011). Although the Borough administration has been able to identify the need for a two-way communication flowing between local government and the residents, nothing was done about it until, at least, the end of 2001. The same is true in regards to the perceived need to provide citizens with greater ability to pay their bills online, or provide feedback in a digital format. That said, only by 2001, the website was able to offer an added functionality of letting people pay parking tickets online.

Sociotechnical theory prompts a researcher to identify existing interaction among elements of e-government sociotechnical system (i.e., technology, business processes, working practices, citizen participation). Sociotechnical theory makes it imperative to look at the state of technology in an organization and try to determine what the most important strengths and weaknesses between technology and the other elements of this sociotechnical system are and how they fit together.

It is interesting to point out that the municipal website has been initiated within the Police Department which happened to be ahead of every other department in the Borough in terms of technology in the mid-1990s. The fact of the Police Department’s unique position of strength in the technological realm in the Borough could possibly be explained by their direct involvement in a number of process automation projects, including hand-held computers for the automated parking
ticket program, the CRIMES automated records management database that they shared with all
the local townships at the time. Exposure to different technological tools should be seen as a
critical factor in creating an advantageous atmosphere in that department which has become
conducive to adoption of new Internet technology. Although other organizational units had
desktop PCs, these machines were used primarily by the administrative support staff for word
processing and email once it became available. In 1995, there were only 30 computers\textsuperscript{13} in all
departments. As the former Director of Information Systems succinctly pointed out, “once we got
more computers, and they were networked, and they had email, the technology in the Borough
just took off” (M. Johnson, personal communication, March 9, 2011).

The theme of importance of administrative support for adoption of new technology is
well developed in prior literature on applications of sociotechnical theory in e-government.
Exploring the organizational business processes, as usual, lead to a question whether existing
organizational structures encouraged cooperation and collaboration, as well as inter-departmental
information sharing. This question is tightly connected to unveiling the degree of the Borough
leadership support of impending changes in e-government development.

In the best-case scenarios, municipal administrators are expected to be technologically
savvy, knowledgeable and understanding the benefits of technology. It so happened that the
Borough had such advantage in the mid-1990s. By all accounts, Peter Marshall was behind
emerging information technology from the beginning of his tenure as the Borough Manager in the
1990s because he was the one who established the Technology Committee. In 2001, the
Technology Committee was dismantled mostly because the formal IT Department has just been
established at that time.

In terms of organizational business processes, it was essential that once the website was
developed, each department had their own section, their own web folder, their own pages that

\textsuperscript{13} Council Minutes, Book 32 (11/20/2000-07/01/2002), p. 9
they have maintained on their own. IS staff provided training to the individual department members who were responsible for updating the Borough’s web pages. Nonetheless, such arrangement didn’t stifle the prevailing atmosphere of cooperation, collaboration and inter-departmental information sharing, mostly due to the positive influence of the Technology Committee. As one of the former Directors of Information Systems recalls, “with all the department representatives there, we must have discussed what each department would put up on a web page” (M. Johnson, personal communication, March 9, 2011).

As far as the Borough’s working practices, the intent of the study was to find out what were the environmental factors that could’ve influenced successful implementation and sustainability of the system, and determine the organizational best and worst practices. At the earlier stage in e-government development (i.e., 1994-1998), lack of staff in technology area was one of the major barriers. However, insufficient sense of urgency and deeper understanding of critical importance of the website project and sustained innovativeness in e-government among the Borough management personnel and elected officials has been a bigger issue from the start. Comments provided by Mayor Goreham add certain credence to this supposition:

This is my second year as Mayor. I was first elected to public office in 1997, and served 3 terms on State College Borough Council. And during that time is when we first had a website. And it was nothing that really drew one’s attention or had a strong connection to local government, to informing elected officials or to being informed by elected officials. So it’s only the last 5 years (for me but I am not an early adopter either) that it has really become more important to have [a website]. It’s becoming increasingly important for entities to have information and interaction accessible through a website (E. Goreham, personal communication, March 11, 2011).

There may be some early indication that environmental factors are about to finally exert some influence on the working practices in the Borough, especially considering the double impact
of modern information technology and demographic factors. The Borough administration acknowledges that the tide is changing:

Technology changes. And a lot of our residents are students. And at 2 o’clock in the morning, when they are active and ready to comment, we are not having meetings. And I would like to have ways that they can participate in government, whether it’s electronically or in person. Time has changed, and we need to be flexible enough to change with it. Showing up at a public meeting will never go away. I mean, there will always be public hearings where people need to show up and speak at a public meeting. But we need to offer alternatives to that as well (T. Fountaine, personal communication, February 25, 2011).

Analyzing accumulated case study data, there is an additional emerging line of reasoning when it comes to moving forward with e-government innovation and getting different elements of this sociotechnical system (i.e., between technology and organizational business processes and working practices) to fit together along the way. For instance, why would a municipal government start to feel the need to move from a simple objective of putting some information out for people on the Web to transactional stage? Apparently, it could be a synergistic combination of two reasons: (1) increasing staff efficiency, making work easier for staff, and (2) ensuring lasting convenience for the public.

**Web Content and Content Management System**

Lack of financial resources is a well-documented barrier to e-government initiatives at the municipal level, and not only at the emerging stage in their development but later in the process as well. Another, less commonly addressed barrier, is that most of IT projects in the municipalities are often “back-burner, get-to-them-when-you-get-a-chance” projects. Such unfortunate approach can easily explain why it took 7 years (from 1998 to 2004) for the Borough
to radically update and redesign the website so that it started to more closely reflect information needs of its end users.

Since the Borough website first emerged as a custom-built system, it has soon become evident that the cost of maintaining such a system could not be sustainable indefinitely, even though, by some accounts, it could have claimed a greater potential for flexibility in innovative design and functionality. As a custom-built system, it lent itself more to sharing best practices and the most practical design features among neighboring municipalities (e.g., a calendar “What’s happening in ____”). That said, it was mostly due to financial restraints that the Borough Administration was pushed to consider the content management products (e.g., CivicPlus) that were primarily designed for governmental use. Another reason to reconsider the wisdom of having a custom-built website was growing concern among staff with procedural difficulties of updating the web content as the number of web pages grew exponentially over time (mostly due the public’s requests for information). As a former Assistant Borough Secretary pointed out, “we were getting a lot of requests for certain things, and then we knew that was something we would want to put out on the Web” (C. Hanscom, personal communication, March 9, 2011).

Reportedly, the Borough Police had to maintain the most time consuming of all the departmental web pages, mostly because they had to submit almost daily updates (e.g., arrest reports). The Administration and the Planning departments have also maintained an extremely active web presence over the years.

A content management system is designed so that each individual department can manage and update its own web content without going through any one centralized location whether that were an administrative unit of a public organization or its IT department. So once the template is done, selected staff in each department, even without any programming skills, can be responsible for putting the content up as a Word or PDF document (e.g., meeting minutes), and the software then would format the document and put it in the right template.
After 2 years (2003-2004) of careful consideration of all possible alternatives, the redesign committee members have unanimously decided to select the CivicPlus website management software tool, even though it was more expensive, but offered a whole lot more functionality, including “some of the things that the users were concerned about in the group [that] were allowing citizens to sign up to get automatic posts and to get notified if someone posted something that pertained to a subject that they were interested in” (T.Grattan, personal communication, March 8, 2011).

CivicPlus

In 2005, the Borough Administration finally contracted CivicPlus, a website management company. On May 20, 2005, Tim Grattan, the Borough IT Director, gave a presentation to the assembled State College Council members highlighting the benefits of the newly redesigned system which was then hosted by CivicPlus 14:

With this new service, there would be a host of services available. One service that is available with the new system is a search capability, which will search the entire site for any document. Another service is “notify me”, which allows citizens to sign up to receive automatic notifications for specific items, such as job vacancies, road closures, etc. This will help to keep citizens informed and take some of the pressure from Borough staff. Mr. Grattan explained how each department is managing their own part of the site so one individual is responsible. This allows for more information to be available on a regular basis, such as agendas and minutes.

CivicPlus content management software package gave the municipality the ability to accomplish several things: (1) ability to decentralize the website content management and transfer control over the web content from one person to several people within the organization who could

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post current information for their own departments; (2) installment of quality control mechanisms to ensure certain level of consistency in the types and ways public information was posted; (3) conducting initial training with people who were chosen to update web content to ensure certain content management rules were observed; (4) ability to boost the website capacity for a two-way interaction (e.g., residents can sign up to receive regular updates on the topics of interest by email); (5) ability to begin the process of online transactions (e.g., accept building permit or registration fee payments, file and pay taxes online).

To this day, there are usually one or two people in each department (depending on the size) who are ultimately responsible for maintaining and updating content on their departmental pages. Since 1999, the Assistant Borough Secretary is the person who is designated by the municipal administration to oversee this process. Before the Borough switched to a web management system, CivicPlus, the Assistant Borough Secretary has been tasked with making regular updates to the site by writing new pages in HTML and then sending them to the FTP site for actual uploading onto the Web.

However, as most of the study participants confirmed during the interview sessions, the CivicPlus content management software that is currently used by the Borough is rather outdated, and, some of them, expressed regret that the Borough still didn’t embrace any of the Web 2.0 features to spice up the website. It’s been 6 years since the CivicPlus-hosted website went live in May of 2005, based on the template has been designed in 2004, and the same template is still running today. In 2008 and later in 2009, Tim Grattan, the former IT Director who was instrumental in bringing about the successful competition of the redesign project of 2003-2004, made several attempts to recommence the Web committee activities. He stated that the Borough needed “to freshen up” the website, add new functionality, consider Facebook integration into the website and “look at how other municipalities were using it”, research phone-based apps and their
use by local government organizations (personal communication, March 8, 2011). However, the project has been placed on the “back-burner” yet again.

**Website at a Glance**

The Borough website is organized in 6 main sections: (1) Government, (2) Departments, (3) Living Here, (4) Business, (5) Visiting State College, (6) Online Resources, and a search function. On the home page, there is a navigation bar that offers residents a chance to send feedback or ask specific questions using an online form called a Comment Form. According to some study informants, such option should encourage citizens to inquire about specific information or services. However, the author argues that this option and the form that goes with it can be easily overlooked because of its inconspicuous location. Furthermore, the Contact Us link on the top of the page doesn’t provide much encouragement for the users to offer suggestions and otherwise become more engaged in municipal affairs.

In addition to the six main sections, the home page presents a navigation bar on the left-hand side which allows easy access to E-Newsletter and other Publications, Home Rule Charter, Borough Codes Proposed Ordinances, Agendas and Minutes, Employment (i.e., job openings) and Online Payments (i.e., Health Department payments, parking permits and rentals, parking tickets, real estate tax and refuse payments, Police testing, and Arts Fest exhibitor registration fee). Online payments are not handled by the Borough, the website redirects user to the “Make a Payment” template for the Borough of State College on the Official Payments site ([http://officialpayments.com](http://officialpayments.com)), which offers several payment options by credit cards (VISA, MasterCard, Discover, American Express), or an e-check.

The purpose of these additional categories is to provide initial guidance to site visitors and allow them to get information or service faster using the fewer number of “clicks”. By
design, they are not mutually exclusive with the six main sections on the home page. Nonetheless, both municipal staff and outside users repeatedly expressed their concerns about considerable lack of the portal user-friendliness and limited capacity of its search function. Low usability of the website can be attributed to its archaic design because it has a ‘hard-core’ home page broken out by department. As the former chief of the IT Department pointed out during the interview, in the early 2000s, “the municipalities were moving away from breaking out their web pages by department and moving more towards breaking it out by function (e.g., “I need this___”, or “Where can I find that?”). “I am building a shed, what do I need to know”, that’s how a citizen approaches it. The Borough’s website is very government-employee-friendly, but not citizen-friendly. And that needs to be the opposite” (T. Grattan, personal communication, March 8, 2011).

The Borough website does not offer any privacy policy for its users. However, during the interviews municipal staff alluded to the fact that redirecting users to the third-party website for making online payments and refraining from collection of any sensitive information (i.e. PII) is a way to address privacy and security concerns of State College residents.

At present, the website maintains minimum ADA compliance requirements (e.g., uniform, block-style fonts, white backgrounds with dark letters, pictures with tags). During the current redesign phase, the IT Department started to consider additional functionality that would enhance the website ADA compliance and mitigate the negative impact of language-related barriers for non-English speaking people who may visit the site. Hopefully, this prospective functionality will allow “to change the majority of the page and it would be an easy one-button click that would change the entire page to a different language” (personal communication, March 7, 2011).
Web Usage and Meeting the Needs of End Users

In this section, the researcher would start a discussion with a supposition that the State College Borough, as it might also be true for other similar municipalities, have a too optimistic view for their official website demand. Based on some extant research, municipalities are offering more and more digital services, while elected official and city managers hardly look at the demand and usage of the website.

For many years, there was not way to determine whether the website was truly effective in meeting the needs of the Borough residents and fulfilling the municipal goals, or whether the website had any visitors at all. However, for the last 3 years, the Borough’s IT Department has been following the website traffic and recording the total number of visits per year, page views, visit percentate (new vs. returning users) as well the yearly number of visits broken down by the users’ geographic location. Table 6-1 below allows to have a rare glimpse into the web log statistics from January 2008 through February 2011, which clearly demonstrates the steady increase in interest towards the Borough website. Although all the numbers provide ample confirmation of a more active web usage over the past few years, the fact that the website now attracts more and more returning users, from 35.31% in 2008 to 49.95% in 2010, and more users from other countries of the world, from 1,153 in 2008 to 4,227 in 2010, appears more significant.
TABLE 6-1: The Borough of State College Government website: Selected Log Data

<table>
<thead>
<tr>
<th>WEB LOG STATISTICS</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011¹</th>
</tr>
</thead>
<tbody>
<tr>
<td>Website visits per year</td>
<td>71,741</td>
<td>180,787</td>
<td>216,533</td>
<td>228,636</td>
</tr>
<tr>
<td>Page views per year</td>
<td>306,901</td>
<td>521,005</td>
<td>611,295</td>
<td>608,070</td>
</tr>
<tr>
<td>Average page views per visit</td>
<td>4.28</td>
<td>2.88</td>
<td>2.82</td>
<td>2.66</td>
</tr>
<tr>
<td>Visit percentage: new</td>
<td>64.69%</td>
<td>53.13%</td>
<td>50.05%</td>
<td>50.29%</td>
</tr>
<tr>
<td>Visit percentage: returning</td>
<td>35.31%</td>
<td>46.87%</td>
<td>49.95%</td>
<td>49.71%</td>
</tr>
</tbody>
</table>

| GEO-MAP STATISTICS²      |           |           |           |        |
| Local visits: State College, PA | 29,335  | 85,606    | 104,463   | 21,969 |
| Local visits: University Park, PA | 2,976   | 6,235     | 2,982     | 650    |
| Visits: Other places in the U.S.³ | 69,713  | 82,529    | 101,891   | 22,871 |
| Visits: Other countries⁴   | 1,153    | 3,069     | 4,227     | 961    |

Note 1: Estimated numbers based on actual recorded web log usage statistics for 1/1/2011-2/28/2011; Note 2: Geo-map statistics for the date range from 01/01/2011 to 03/09/2011 represent actual record data; Note 3: Visits from other states in the U.S. include California, Colorado, Florida, Hawaii, Illinois, Maryland, New York, New Jersey, Massachusetts, Ohio, Texas, Vermont, among others; Note 4: Visits from around the world include such countries as Austria, Australia, Brazil, Canada, China, Denmark, France, Germany, India, Italy, Japan, Mexico, Pakistan, Philippines, Russian Federation, Spain, Thailand, UK, among others.

To this day, data about what really attracts users to the website, or what kind of information or services they could be seeking is sadly lacking. However, as a promising start, the IT Department was able to provide point out the top 5 searches that have brought people to the municipal portal: (1) State College borough, (2) State College police, and (3) State College police department, (4) State college PA, and (5) Statecollegepa.us. That is a good start but it is nearly not enough to learn about actual needs and interests that bring users to the Borough website.

For the past several years (2008-2010), the Borough has been participating in the National Citizen Survey, conducted under the auspices of the International County/City Management Association (ICMA) and a group called the National Research Center (NRC), a private, nonprofit corporation based in Boulder (CO). On a couple of occasions, these surveys raised questions about the availability and the type of Internet access at home, because the Borough was interested in finding out whether State College residents had a fiscal capability of
using the Web as a way of getting government information and giving some feedback in return. In fact, the same question has been asked repeatedly in a number of surveys of the individual neighborhoods like College Heights, or Highlands back in the 1990s. Only in 2010, for the first time, the National Citizen Survey administered by the municipal government, posed a question to local residents about how frequently they use or access the Borough website. The results were astounding since the majority of people answered “Never”. Some other questions have prompted citizens to report on their use of Twitter, Facebook, Linkedin, the Borough website to find information in order to gauge at least “some indication of how receptive they would be to continue, or to expand their use of that media as a communication tool with the Borough” (C. Hess, personal communication, March 10, 2011).

It becomes quite evident from the 2010 National Citizen Survey (which is available online on the Borough website under the Publications option on the portal’s navigation menu) that State College residents are far behind in using e-government tools if compared to other places nationwide. Results for the 2010 survey have been statistically weighted to reflect the proper demographic composition of the entire community. A total of 763 completed surveys were obtained, providing an overall response rate of 26%. NRC’s database of comparative resident opinion is comprised of resident perspectives gathered in citizen surveys from approximately 500 jurisdictions whose residents evaluated local government services and gave their opinion about the quality of community life, civic engagement and public trust, their use and perception of various information sources and local government media services. According to the Executive Summary of the 2010 National Citizen survey respondents demonstrated strong trust in local government. A majority rated the overall direction being taken by the Borough of State College as “good” or “excellent.” which was much higher than the benchmark. However, these encouraging results do not include citizens’ participation in public meetings over the Internet, or visits to the Borough of State College website. In 2010, 53% reported that had visited the
municipal web pages at least once which 1% less as compared to the previous year and much less than the national average or university communities of the comparable population size (see Figure 6-4 and Figure 6-5 below).

\[\text{\textbf{FIGURE 68: PARTICIPATION IN CIVIC ENGAGEMENT OPPORTUNITIES BY YEAR}}\]

\[\text{Attended a meeting of local elected officials or other local public meeting} \]
\[\begin{array}{c|c|c|c}
\text{Year} & 2010 & 2009 & 2007 \\
\hline
\text{Percent} & 18\% & 18\% & 24\% \\
\end{array}\]

\[\text{Watched a meeting of local elected officials or other public meeting on cable television, the Internet or other media} \]
\[\begin{array}{c|c|c|c}
\text{Year} & 2010 & 2009 & 2007 \\
\hline
\text{Percent} & 33\% & 33\% & 37\% \\
\end{array}\]

\[\text{Volunteered your time to some group or activity in State College} \]
\[\begin{array}{c|c|c|c}
\text{Year} & 2010 & 2009 & 2007 \\
\hline
\text{Percent} & 59\% & 50\% & 59\% \\
\end{array}\]

\[\text{Participated in a club or civic group in State College} \]
\[\begin{array}{c|c|c|c}
\text{Year} & 2010 & 2009 & 2007 \\
\hline
\text{Percent} & 40\% & 42\% & \\
\end{array}\]

\[\text{Provided help to a friend or neighbor} \]
\[\begin{array}{c|c|c|c}
\text{Year} & 2010 & 2009 & 2007 \\
\hline
\text{Percent} & 93\% & 89\% & \\
\end{array}\]

\[\text{Percent participating at least once in the last 12 months}\]

\[\text{\textsuperscript{1} Over the past few years, local governments have adopted communication strategies that embrace the Internet and new media. In 2010, the question, "Watched a meeting of local elected officials or other local public meeting on cable television" was revised to include "the Internet or other media" to better reflect this trend.}\]

\[\text{Borough of State College} \quad \text{2010}\]

\[\text{FIGURE 69: PARTICIPATION IN CIVIC ENGAGEMENT OPPORTUNITIES BENCHMARKS}\]

<table>
<thead>
<tr>
<th>Activity</th>
<th>National comparison</th>
<th>University Communities with populations 25,000 to 99,999 comparison</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attended a meeting of local elected officials or other local public meeting</td>
<td>Much less</td>
<td>Much less</td>
</tr>
<tr>
<td>Watched a meeting of local elected officials or other public meeting on cable television, the Internet or other media</td>
<td>Much less</td>
<td>Much less</td>
</tr>
<tr>
<td>Volunteered your time to some group or activity in State College</td>
<td>Much more</td>
<td>Much more</td>
</tr>
<tr>
<td>Participated in a club or civic group in State College</td>
<td>Much more</td>
<td>Much more</td>
</tr>
<tr>
<td>Provided help to a friend or neighbor</td>
<td>Similar</td>
<td>Similar</td>
</tr>
</tbody>
</table>

Figure 6-4: 2010 National Citizen Survey, Borough of State College, Participation in Civic Engagement. Note: Figure adapted from http://www.statecollegepa.us/
Information and Awareness

Those completing the survey were asked about their use and perceptions of various information sources and local government media services. When asked whether they had visited the Borough of State College Web site in the previous 12 months, 53% reported they had done so at least once. Public information services were rated favorably compared to benchmark data.

Figure 6-5: 2010 National Citizen Survey, Borough of State College, Use of Information Sources by Year. Note: Figure adapted from http://www.statecollegepa.us/index.aspx?NID=1251

The survey results should have highlighted the following three implications for the Borough’s government: (1) it should also keep other channels of communication open even after the transition process to e-government, (2) the municipality should incorporate a thorough exploration of various groups of residents needs into any website redesign attempt, and (3) it should make a concerted effort to advertise and promoted real advantages of using the municipal website for a variety of activities, from getting information about the fall leaf collection schedule to filing local taxes online.

State College is a college town and Penn State students represent a significant part of the Borough population. The Penn State Fact Book\textsuperscript{15} informs that the Fall enrollment of 2009 for the University Park campus reached 44,832 including both undergraduate and graduate students.

\textsuperscript{15} http://www.budget.psu.edu/FactBook/StudentDynamic/UGGREnrollSummary.aspx?YearCode=2009Enr&FBPlusIndc=N
Analysis of the case data indicates that the Borough government gets a lot of requests from students for changes in the website expressing a need for such Web 2.0 functionality as social networking. They are expecting much more from the Borough website than it is currently providing. Some of the interviewees, including State College Mayor Elizabeth Goreham, made encouraging comments in view of such direct expression of user needs. Mayor Goreham pointed out during the case interview on March 11, 2011 that time has come to act on such requests and embark upon reorganizing and modernizing the website. Mayor Elizabeth Goreham is a strong believer in building strong town-and-gown relations. That was one of the reasons Mayor Goreham has opened an outlet for discussion for students concerned with local issues by holding office hours in the HUB-Robeson Center at the University Park campus (Boyle, 2010).

_Two-Way Communication, or E-participation in Action_

Based on the assessment of the current state of the Borough website it is hardly possible to suggest that it moved beyond the transactional stage in its development since transitioning to the CivicPlus content management system in 2005. However, there were a couple of events in the course of the website history that could have propelled it into a more advanced stage of e-participation when residents have more opportunities to contribute to decision-making processes. At any rate, at least one event, the Beaver Canyon riot of 1998 in Downtown State College, did in fact signify one big change in history of the website and the in the way it was perceived by both the Borough government and the community it served. It was an eye-opening experience, which has clearly demonstrated the unique potential of a web-based citizen-to-government two-way communication.
Riots in Downtown State College

Riots in Downtown State College in 1998, 2000 and 2001 have left an undeniably lasting mark on history of the Borough of State College and its official website, even though it is not immediately discernable. In fact, almost all the study participants remarked on defining significance of those events, particularly of the first riot in Beaver Canyon in 1998. In July 1998, for the first time in State College history, Borough police have taken to the Internet in hopes of arresting more of the rioters and have posted 11 photographs of nine suspects on the website, http://www.gov.state-college.pa.us (see Appendix B). It was Marge Johnson, the Data Processing Manager in the Police Department, who came up with this innovative idea to “use technology to help identify people, students who have been participating in this riot, put images up on the website, and ask people to identify them” (personal communication, March 9, 2011). Around that time, there was a conference at Penn State, and Marge Johnson “talked about how we [the Borough Police] have done this, and about the technology that has been involved. And Michigan State\(^{16}\) did the same thing: put images up on their website” (personal communication, March 9, 2011).

According to the former Borough Manager, Peter Marshall, this innovative idea proved to be singularly effective: “And we went to court with that information and won almost all the cases. That was a big thing. And they [the Borough police] have been doing this ever since. Bank robber. They will get a picture and they will put it in there asking for help and identifying the person. That was good” (personal communication, April 1, 2011).

Both events (the 1998 riot and the unprecedented use of the Internet technology to solicit public’s help in the police investigation) made the front page of a local newspaper, the Centre Daily Times (Gosier, 1998). The 1998 riot in Beaver Canyon could go down in State College e-

\(^{16}\) Michigan State University had a student riot, which took place on and around the campus in East Lansing, Michigan on March 27, 1999
government history as a true inspiration for launching the two-way government-to-citizen communication about 10 years later.

**Open City Hall Project**

There was another fateful event in the Borough website history: a Open City Hall pilot project, which could be described as an online public comment process monitored by Peak Democracy\(^\text{17}\) to maintain a formal decorum of a government meeting. This project was initiated with the idea to create an enticing online environment of more active citizen participation in civic affairs, mostly local government issues (e.g. sustainability). The process should have allowed the Borough to pose questions and poll the community for input. As a member of the Alliance for Innovation\(^\text{18}\), the Borough was contacted to run a pilot project along with the other seven urban communities including Decatur (GA), Montgomery (OH), Williamsburg (VA), and Palo Alto (CA). In case of this pilot project, the Borough made a fairly good attempt at advertising the event: (1) it was linked to Facebook and Twitter; (2) several local media agreed to put a button on their web pages. For instance, when the Centre Daily Times (CDT) ran a story that was connected to something that the Borough’s Open City Hall project, there was a way to go directly from their web page to Open City Hall, then register and post a comment.

According to the Borough Manager recollection, there was “one issue that got a lot of traction that happened to be a zoning issue involving a dog grooming home occupation. It created a lot of buzz; we did get a lot of contact through that process, but overall, we didn’t get a lot of traction” (T. Fountaine, personal communication, February 25, 2011).

The project ran for about 6 months, from October 2008 through March 2009. As Borough Manager pointed out, the cost of this project was fairly insignificant, yet it had to get Council’s

\(^{17}\) http://www.peakdemocracy.com/
\(^{18}\) http://transformgov.org/en/home
approval because of its nature of visibility and openness. In case of this project, the Borough’s administration has demonstrated commendable understanding of potential benefits of new technology:

My opinion and my recommendation as a manager was that it provided a relatively inexpensive method for people to participate in government. And even if they were from Timbaktu, if they had something worthwhile to say, it was worth hearing. We should have the means and the ability to manage that (T. Fountaine, personal communication, February 25, 2011).

Nonetheless, during a regular meeting on March 9, 2009, Council, after brief discussion of the benefits of engaging in online conversations with citizens, unanimously decided to discontinue (the motion passed with 7-0-0 vote) the project with Peak Democracy. According to the minutes from this meeting that are posted on the website19, “Council discussed the the benefits of engaging in online conversations with citizens. Concerns were raised that the participants could be anonymous. Some Council members felt it would be less expensive to create a blog, independent of the Borough, to discuss Borough topic. Council members stated that there could be a more direct and local way of doing this”.

Since 2009, none of these alternative solutions suggested by Council members has been truly tested or put into action. Some participants suggested that the Borough administration was planning to set up a blog which would be primarily related to neighborhood and student issues. Currently, there is an AmeriCorps staff person in the Borough, who works closely with student organizations and neighborhood associations and hopes, in the next several months, to set up a moderated blog that would presumably focus on these Town & Gown issues. However, this plan

may still have not worked out after all due to this person’s limited engagement with the Borough government.

**Facebook Project**

In 2008-2009, the Borough’s IT Department has independently designed a Facebook page as a way to bring the aging website up-to-date and, possibly, facilitate two-way communication between municipal government and citizens of State College. The IT Department should be given credit for encouraging input from local residents while working on the Facebook page design, which was the first attempt to solicit end user suggestions to improve the Borough’s website since the time of its launch in 1997. Citizens were invited to attend committee meetings and offer suggestions.

Tim Grattan, the IT Director at the time, alerted the former (i.e., 2003-2004) redesign committee members, mostly the department heads, to the growing need of ‘freshening up’ the website and testing new functionalities primarily associated with such social media tools as Facebook and/or Twitter. In 2008, the Facebook Committee thoroughly examined how other municipalities were using Facebook, paying attention to certain related legal issues including the First Amendment right to free speech. The Committee was able to find 1 or 2 municipalities that were using Facebook as a one-way tool. However, Facebook, as one participant described it, is “like the telephone, and you gotta be able to talk. So you want to post issues, then let people talk about it and stir the pot” (T. Grattan, personal communication, March 8, 2011). According to Tim Grattan, the IT Department was ready and willing to provide temporary, ‘trial run’ monitoring and moderating services once the Facebook page was up and running.

However, the Facebook project implementation has been indefinitely suspended by the Borough Manager, primarily, because of some residual controversy related to the question of how to handle two-way communication once the Facebook functionality of the Borough’s website was
turned on. The problem with still delayed Facebook project implementation lies with the apparent
organizational inability to allocate time and staff to support it. Following somewhat ambivalent
responses given by the Borough Manager, the organization simply needs to have somebody on
staff capable of managing those types of activities given perpetual time and financial constraints:

It’s not something that, I think, in the government setting, we can just say “Here, come in and post whatever you want”. And then you end up with appropriate and inappropriate
comments. It has to be moderated, and that takes time. And we don’t have anybody on
staff currently, who has time to devote to that. We also have a Facebook site (actually
social media site) that we have developed. The templates are ready to go. Everything is
there. All we have to do is turn the switch and make it live, but for the same reason, we
need somebody to monitor and moderate that (T. Fountaine, personal communication,
February 25, 2011).

At the end, the Facebook project has been stopped in its tracks, mostly because of
aforementioned procedural difficulties. Nevertheless, the author contends that such explanation is
only part of that problem. It is more likely to have been a reasonable excuse to postpone adoption
of a technological innovation with uncertain consequences for the organization itself and
unsubstantiated benefits for end users, or the general public. It appears, there could be some
hidden barriers embedded in the depths of organizational culture that the author chose to call the
“late-adopter syndrome”. The story of the Facebook project brings to light an implicit clash of
divergent cultural trends in the organization. It becomes more visible to an observer by simply
contrasting the previously mentioned authoritative managerial decision on the Facebook adoption
with a different, more entrepreneurial in spirit, suggestion offered by the IT Director at the time:

We have to find out how we manage that. If we do, we hit the nerve, and we find out
that’s where the activity is, then we need to be there. Because the activity, in my opinion,
is already there, we are just not at the party. But it was decided to wait, not do it because
we don’t know what will happen. If someone puts a post that isn’t good, we’ll take that
off. But you have to try it: if it’s good for nothing, and we do it for 3 months, we’ll just
turn it off, or circle around and try it again in a couple of months. Or maybe we will regroup and say “Let’s put the brakes on, figure that out and then come back at it” (T. Grattan, personal communication, March 8, 2011)

In summary, it is important to emphasize that some municipal governments like Decatur\(^2\) (GA) that participated in the Open City Hall pilot project, which was discussed in the previous section, have adopted that e-participation initiative, thus affirming their more entrepreneurial organizational culture. That said, some study participants argued that an old-fashioned face-to-face human interaction is still more effective than computer-mediated communication between municipal government and its citizens. In the recent past, during regular Council meetings when “there were real people present, their opinion weighed more” than electronic communication in influencing the outcome of its decision making (E. Goreham, personal communication, March 11, 2011). Perhaps, it may be true, at least for the time being. Yet, local residents should be able to choose e-participation if they are so inclined, and, hopefully, be equally effective.

\(^2\) http://www.decaturga.com/index
Current Problems and Challenges

Sustaining Innovation

One of the challenges for the continuous innovative application of web technology is further advancement of local governance reform. Back in 2000, Juliet Musso and her colleagues have observed, based on a systematic content analysis of 270 municipal web sites in California, that municipal websites primarily support entrepreneurial (i.e., city as a local service provider) than participatory reform that stresses the civic character of the city.

Relying on current qualitative analysis of collected data, the author concludes that the State College official website provide a rich array of information and services but still lack features that might effect meaningful improvements to local governance and structure communication channels in a fashion that might improve democratic processes in the area. It becomes apparent that sustaining innovativeness in developing a municipal website is no less important at a later stage than it was at the very beginning. Often enough, lagging behind could be attributed to unfortunate lack of sustained spirit of entrepreneurship and innovativeness among the top echelon of city officials rather than lack of funding for pending projects which is commonly accepted as a barrier to local e-government initiatives. A good example to illustrate this point would be a rejected IT Department’s proposal of 2009 to launch a fully developed Facebook page within the Borough website as a platform for soliciting citizens’ input and promote civic engagement, at least on a trial basis.

User Participation in Website Development: Past, Present and Future

As suggested by sociotechnical theory, Cherns’ (1976) design principles and “jigsaw-puzzle components” of e-government configuration, citizens’ input should be taken into
consideration for successful e-government sociotechnical configuration at all times during the process of design/redesign and implementation.

In the past, there have been some aborted attempts made to engage end users, State College residents, in the iterative process of website redesign. To illustrate this point, it would be appropriate to address some of the Borough IT Department’s efforts to organize a committee of people external to the organization who would have been willing to share their ideas on how to change the website so that it would look more like 2010 rather than 1997 creation from the standpoint of its graphics, design and navigability, as well as user-friendliness:

When we did the Facebook meetings in 2008-2009 timeframe, [the IT Department Director] actually worked with outside people, citizens. Someone would email me and say: “How come you web page does this?” And I would say: “Well, the Public Works Department thought that would be handy for people to know. But I am interested in your input. If you would like to help us, you can come in and sit on our committee” (personal communication, March 8, 2011).

In all fairness to the Borough Administration, it should be noted that they do understand both the need to bring the municipal website up-to-date and to reach out to the broader community with intent to solicit residents’ input about desirable design features. Currently, there is no finalized redesign plan in place, but the expectations are that something will be done within the next year or so. Yet, there is a number of good ideas floating around in the organization. These ideas are mostly generated by a fairly new, loosely formed redesign committee (or a Borough-wide collaboration network) with the IT Department in the lead. Similarly to modus operandi chosen by the first Technology Committee in the 1990s and later the redesign committee in 2003-2004, the IT Department staff today is intent on getting input from all the departments in the Borough about the current website weaknesses and strengths. The IT Department encourages staff from other organizational units to share any feedback they could’ve received from citizens, companies, or vendors. The new redesign committee plans to examine
what other communities are doing in the technology realm, what new things like iPhone or Droid applications, or new ways to do e-payments they may be offering their citizens

Developing user focus groups and bringing them in to the Borough to provide direct feedback about the website is only one of the discussed possibilities for user participation in the website redesign. As the 2011 redesign committee members get together for brainstorming sessions, they discuss a variety of options to gather local public opinion on the State College official web presence. The study participant from the IT Department, currently heading up the project, outlined the general direction such discussions take with respect to potential user involvement in the website redesign:

So, hopefully, we’ll be able to ask different focus group questions depending upon how people fit into the community. And then that would hopefully play a role in how we do the updates, how we make the website look and feel, especially on the main page. Maybe we’ll change things around depending upon what people are looking for, and how they search for things. A lot of people don’t want to read paragraphs of pages now like they used to, they want answers, they want things to do on a website. So, hopefully, we’ll be going within that direction (personal communication, March 7, 2011).

All types of local e-government users, whether they are municipal employees, elected officials, or representatives of the broader community of State College residents, Penn State students, businesses, etc., should have an equal opportunity to periodically review and evaluate the website to make sure it does always meet their current needs. A number of revolving participatory evaluation tools (e.g., user focus groups, surveys, or special blogs) can be tested over time to determine what approach works best to this particular community. However, the issue of participatory involvement of the broader community of users in the continuous website redesign process is still pretty much something that needs to be carefully worked out and intertwined with the organizational working practices. Currently, it is one of the biggest
challenges the Borough website project is facing, and the most important piece of the “jigsaw puzzle” configuration of that sociotechnical system that is yet to fall into place.

**Getting the Word Out**

It has become abundantly clear, that the Borough did precious little to let State College residents know about the existence and potential benefits of using the website. Reflecting on data collecting during the interview process, there could be a variety of reasons for this lack of effective advertising and promotion of the government portal, from the limitations posed by existing organizational culture to lack of funding. During one of the interviews, the Planning Department director adequately described this problem as “an identified weakness in the organizational structure”:

We don’t do public relations real well here. We don’t have a public information department or officer. Each department is kind of responsible for doing whatever press releases they need to do. That is an identified weakness in the organizational structure. Two years ago, the Borough Manager proposed we hire a public information officer and was not able to find funding to do that. So that’s kind of weakness we know we have, [which] our ability to use information most effectively. So we put out website out there: kind of assume that people just find and use it. I don’t remember us doing any kind of virtual “ribbon cutting” ceremony, or anything like that. (C. Hess, personal communication, March 10, 2011).

Lack of advertising efforts and more regular public relations campaign throughout the entire history of the Borough website can be seen as yet another barrier in promoting e-government initiative in the Borough. It’s commonsensical that people do not normally use what they may not know much about. There should be more tools, more opportunities for the Borough to find out what people really think about the website, and even if there are aware of its very existence, especially if the website use (e.g., filing and paying taxes online) may bring about some additional revenue and perhaps saving to the municipal coffers.
“Getting the word out” about the benefits brought by using municipal e-government information and services is extremely important, and lack of public relations or direct advertising is not necessarily the a result of inadequate funding. It may simply be a matter of traditional mentality typical for public organizations. As study informants reflected upon during some interview sessions, there could be at least two ways to attract people’s attention to the website:

(1) When we send our tax forms out to taxpayers, there should be a piece of paper in there that, in a very simple language, explains how they can file online.

(2) Another way would be to put some stories in the newspaper about new features [on the website]. That would catch peoples’ eye, and we can check the local newspaper to do a little story just by having a press release that says: “Look at our new feature”. [And it may cost the Borough not a penny if] we can make the newspapers think that is a story, rather than paying [them] for an advertisement (personal communication, March 14, 2011).
Chapter 7

Discussion and Conclusions

Discussion

E-government has already fundamentally changed the way people in State College interact with government. The Borough residents and anybody else who visits the website get immediate access to timely information about the Council agendas and minutes, read digital copies of municipal codes and ordinances, file applications online and conduct a number of financial transactions. Similarly to current federal and state e-government practices, the Borough has recently entered a new age of government publishing, by launching a number of digital publications, like E-Newsletter or the National Citizen Survey reports. According to the current Borough Manager, it is hardly possible to think of any documents currently produced by the municipality that are not also available electronically.

However, there is still a lot that needs to be done in order to bring the Borough’s e-government project up-to-date. Considering the maturational model of e-government innovation that was covered in Chapter 3, analysis of collected data (including the website evaluation) allows to suggest that the Borough’s portal has reached the transactional stage in its development at the time of writing the thesis. The author used sociotechnical theory and the maturational model to represent a process of e-government development, thus testing, in a way, whether such process driven by the principle of ongoing system redesign (i.e., the process of securing the optimal fit between the e-government sociotechnical system’s major components) could follow the path predicted by the maturational model of e-government innovation. Table 7-1 below illustrates the
author’s point that there is no contradiction between sociotechnical theory approach to building an e-government system and the maturational model of its step-by-step, sequential development.

**TABLE 7-I: Five Maturity Stages in Development of the State College Borough e-Government Sociotechnical System**

<table>
<thead>
<tr>
<th>STT MATURE MODEL</th>
<th>TECHNOLOGY</th>
<th>BUSINESS PROCESSES</th>
<th>WORKING PRACTICES</th>
<th>CITIZEN PARTICIPATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENHANCED (1998-2001)</td>
<td>Installation of new IT infrastructure (dedicated fiber connections &amp; Internet access) Exponential growth of web pages due to the public requests for information Police, Administration, Planning having active web presence</td>
<td>1997-2005: Centralized web maintenance (HTML coding, uploading updates) via Administration Dept. 2001-present: IT Dept. &amp; Help Desk for IT tech support 1-2 staff in each dept. assigned to keep web page(s) content up-to-date and submit updates to the Webmaster in Admin. Dept.</td>
<td>Shared responsibilities for content management among departments Added ability for Borough employees to utilize the Internet as a business tool for everyday tasks</td>
<td>Citizens’ interaction with the Borough Police in support of their various investigative activities (1998-present)</td>
</tr>
<tr>
<td>SEAMLESS</td>
<td>Total integration of cross-boundary e-functions Two-way communication</td>
<td>Projected implementation in 2012</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Qualitative data collected at the initial stage of this project point towards the current top objectives of the municipality in the e-government realm: (1) maintaining good communication with various constituent groups in the community including students, senior citizens, local businesses and organizations, neighborhood associations; (2) developing new possibilities for citizen self-service and improving their ability to engage in online transactions with the Borough (e.g., recruitment applications for police officers, payments for parking tickets, registration fees, monthly passes, temporary passes for street vendors during the traditional State College Art Festival); (3) limiting existing barriers for people with disabilities and non-English speaking population who may be visiting the Borough website.

Back in 2005, Moon and Norris hypothesized a potential interaction between municipalities’ technological, financial and political (e.g., support out of the city council) capacities. While advantages of having an official website should eventually realize cost savings through increase efficiency, it is obvious that local administration is still struggling with the burden of significant investments in the technical infrastructure, applications and operational support.

It is safe to say now, more than ever, that local governments are facing the challenge of engaging their citizens in democracy. Gradually, as this study suggests, municipal e-governments embrace new technology including social media as a tool for building communities, enabling democracy, enhancing service delivery, and streamlining internal operation. The questions raised by adopting the maturational model of e-government innovation for this case study, especially with respect of State College government eventually reaching the integrated, “seamless” stage of e-government with the fully realized capacity for broad-based citizen engagement in government decision making, are not about technology. The technology needed to make this vision a reality is all available and ready to use. The challenges facing the Borough government are how they would confront those issues and move forward with e-government.
Emerging Findings

Given the apparent limitations of a single case study research design, the following findings are tentative, however they raise certain important issues that require further research and may eventually become critical factors in successful development of e-government in small municipalities.

• “Late adopter” syndrome
  A number of interview responses from staff and elected officials indicated that the Borough as an organization can be placed among the late adopters of e-government innovation. Developing of this syndrome may possibly be associated with staff resistance to change, a barrier to e-government successful adoption and implementation well recognized in prior research.

• “Back-burner” factor in adoption and implementation of new e-government technology
  Several interviewees expressed serious concern that most IT projects at the Borough are not front-burner projects but usually “back-burner”, “get-to-them-when-you-get-a-chance” projects. Neglecting consistently poor, lukewarm usability assessments coming from the general public and even from the organizational end users, the website redesign projects traditionally took second fiddle to almost any other project that came up. If such attitude continues to affect working practices in the Borough, it may seriously endanger its organizational standing in the future which is likely to be closely associated with transformational nature of e-government.

Conclusions

As with any other case study, the biggest limitation remains lack of data. Since findings presented in this thesis are specific to just one municipal government, the researcher should
advise readers to exercise caution in making sweeping judgments. Such study can hardly provide enough information to make broad generalizations pertaining to local e-government adoption, implementation, and development. While the researcher is fairly confident that the investigated municipal government is typical of many other similar small-sized municipalities (with a population of less than 100,000) in the United States, further study is necessary before the results can be considered representative of most municipal e-government implementations. However, judging by the openness of the State College Borough government, there is a good chance to gather enough data from other municipalities of similar size and government capacity around the state and/or nationwide to further study of evolutionary trends in local e-government development.

This thesis outlined a formative, multi-method, historical model for a local government website recurring redesign and evaluation. Considering the obvious limitations of a case-study design, reported research findings allowed to identify an adequate “fit” between existing web technology and other structural components, organizational and, to a much lesser degree, a wider social community of local residents in the Borough of State College. This fit between the technical and social subsystems can be easily translated into increased effectiveness in delivering government information and public services, improved speed and efficiency of the business processes within the organizational subsystem.

Damodaran and her co-authors argue that mechanisms of citizen engagement, which combine the latest Web 2.0 technology with organizational, communication and democratic processes, should facilitate the co-creation of local policy decisions about salient issues, much more so than “simple one-way transmission of information from the local authority to the citizen” (2005, p. 7). However, reaching the goal of an optimal fit between the technical subsystem and the social subsystem with the Borough’s e-government structure, the one that requires greater citizen e-participation remains something to be much desired.
That said, if e-government in the Borough of State College were truly seen as a sociotechnical system, which allows and encourages strong public participation in continuous process of website design and evaluation, such progressive attitude among staff and elected officials would have created a better chance to boost citizen involvement in municipal affairs and, consequently, would have brought about reduction in any forms of possible social exclusion.

It seems reasonable to suggest that shifting an emphasis in research toward identified deficiencies in e-government implementation at the local level, such as lack of public awareness, may prove to be more important than assessing the impact of digital government initiatives on the state of municipal affairs. Perhaps, those deficiencies are partly to blame when it comes to the Borough’s laggardness in adoption of e-government interactive services (i.e., Facebook, Twitter, blogs). If so, they seem to impede the Borough’s forward movement toward embracing Government 2.0, the most interactive form of e-government today.

In 2005, Ed Rendell, then the Governor of Pennsylvania, anticipated the possibilities of e-government that would “allow us to pursue an interactive environment, where citizens have access to their information, can transact their business, and in the future, perhaps, participate in the process of governance” (Rendell, 2005, p.156). Looking back at the findings, there is hope that this future when the State College residents regularly participate in the process of governance maybe not so distant.

This study has adopted a socio-technical approach to examining an ongoing process of e-government implementation by the Borough of State College (PA) government in that has started over 12 year ago. Considering the study findings that were discussed in the preceding chapter, there is certain likelihood that future trends in e-government development in the Borough of State College would include adoption of a number of features representative of Government 2.0. However, as it was previously stated in Chapter 3, sociotechnical theory requires a “perfect fit” among all the system components. Based on the earlier discussion of the study findings, the
current iteration of the Borough’s e-government sociotechnical system cannot be described as a “perfect fit”, not until the “jigsaw puzzle” component (see Figure 3-3) representing citizen participation falls into its proper place within that system.

It should be noted that reported findings, even with their inherent limitations, provide compelling confirmation of the theoretical validity of the maturational model of e-government evolutionary development. Still, lack of strategic long-term planning of e-government implementation in the Borough remains one of the most important findings, as do shortage of more progressive changes in the organizational behavior and attitudes toward technology since the mid-1990s. Although the Borough website provides useful public information and a satisfactory number of online services, the readiness for the next level of e-government, e-democracy and e-participation, is still rather low and needs to be brought closer to technological and social requirements of the 21st century.

**Future Work**

In sync with the theoretical framework chosen to guide this study, it would be critically important to have another look at the Borough website in a year or so to see if any changes took place in view of currently planned redesign initiatives the author discussed in the previous sections. For instance, it would be necessary to reevaluate the state of citizen participation component in the State College Borough e-government sociotechnical system. It appears to be a salient research objective to further explore various barriers both old and, perhaps, some new (if any) that could be still holding back the e-government advancement in the Borough.

Later on, as a logical research progression, the author intends to conduct a comparative multiple-case study with a focus on examination of e-government initiatives in other municipalities that are comparable with State College. Among possible options could be a study of e-government development in other university towns like Decatur (GA), or Champaign (IL), or
Athens (GA), or some other “Big Ten” municipalities. As a matter of fact, Athens (GA) could be a reasonably comparable choice as it is a small town with a big university.

Since State College is a university town, it would be justifiable to expect certain similarities between this municipality and other university places around the country, or just in the State of Pennsylvania. At the same time, it is possible that their web pages could have reached a different stage in their development. And the author’s research objective would be to identify the causes behind potential differences in e-government evolution in each individual case. Future studies should examine in greater detail other municipal governments in order to find more reliable proof of a potentially wider diffusion and implementation of Government 2.0 by local governments in the State of Pennsylvania and beyond. Perhaps, since Penn State is an integral part of State College social fabric, it would also be reasonable to explore the “Big Ten” municipalities where people and their governments may be facing similar problems related to innovations in e-government.
References


Appendix A

State College Newsletter (Spring 1998)

These grants enabled the Borough to purchase specialized equipment such as the compost turner, compost spreading and a leaf truck.

State College Borough is extremely pleased with the program so far. Residents have been very cooperative, being careful not to contaminate drop-off sites with plastic garbage bags or other debris. Residents living near the compost facility haven't experienced any problems. "Our biggest complaint right now," says Lee Tawney, Director of Public Works, "is that we don't have enough compost to give away!"

BULK PURCHASES

The price of the Borough's recycled products will use the same recycled properties as the Borough's and the Borough's recycling program. To keep this available, suppliers must be licensed and approved. If you are interested in purchasing the products, please contact Lee Tawney, Director of Public Works. Orders can be placed through the Borough's Public Works Department.

Information on the Borough's recycling program can be found on the Borough's website or by contacting Lee Tawney, Director of Public Works. The Borough will be more than willing to provide more information on how to use our materials.

STATE COLLEGE BOROUGH • ONLINE AT HTTP://WWW.GOVSTATECOLLEGE.PA.US.

If you haven't visited the Borough's website, you are missing out on a lot of free information. Access the site at http://www.gov.state-college.pa.us. The site is divided into easy-to-access pages with links to specific topics.

NEW!!! Need to get a copy of an agenda? Click on "Agendas." It's so easy to find out what the topics of discussion will be for upcoming meetings.

ALSO NEW!!! Ever think about working for the Borough? A new section called "Job Opportunities" lists openings before they are advertised in the newspaper.

COMING SOON!!! A town center chat room. Do you have some ideas about the proposed town center on South Allen Street but can't make it to a Council meeting to let us know in person? The Borough is setting up a compverse webpage on our website where you'll be able to post comments and read the comments of others. Check our website beginning April 1, 1998 for details on how to use this feature! Other pages within the site are still available and are updated regularly.

If you can't find an answer on the web, you can e-mail staff with questions, comments or concerns. You can send your email to the Borough's general address at boro@gov.state-college.pa.us, or any of the following departments:

- Administration: jkp@gov.state-college.pa.us
- Planning Department: ljm@gov.state-college.pa.us
- Public Works Department: dld@gov.state-college.pa.us
- Health Department: sk@gov.state-college.pa.us
- Police Department: mj@gov.state-college.pa.us
- Finance Office: tmk@gov.state-college.pa.us
- Tax Office: pkr@gov.state-college.pa.us

Feel free to drop us a line about concerns or questions you have about the Borough.

The Borough is continually expanding its use of modern technology to keep the facts you need available on the information highway. Visit our web page or e-mail us to keep up-to-date on current events happening in your community.
Appendix B

Screenshots of the 2000 and 2001 Police Department Web Pages: Riots in Downtown State College (PA)

2000

The State College Police Department is asking for your help in identifying suspects involved in the 16 July 2000 riot in Beaver Canyon. If you recognize any riot participants in the images below, please contact SCPD Detective Chris Weaver at email clw@gov.state-college.pa.us or phone #814-234-7150. Callers can remain anonymous. SCPD detectives will use information provided in an effort to recreate the events of the 16 July 2000 riot in Beaver Canyon.

Click on each image for a larger picture:
Riot 23 March 2001

The State College Police Department is asking for your help in identifying suspects involved in the 23 March 2001 riot in Beaver Canyon. If you recognize any riot participants in the images below, please contact SCPD Detective Chris Weaver at email elw@gov.state-college.pa.us or phone 814-234-7150. Callers can remain anonymous. SCPD detectives will use information provided in an effort to recreate the events of the 23 March 2001 riot in Beaver Canyon.

REWARD: Centre County Crime Stoppers is offering up to a $1,000.00 REWARD for information that leads to the arrest of the suspects involved in the 23 March 2001 riot in downtown State College. To be eligible for the reward, call 1-877-99-CRIME.

For riot damage report, please read PRESS RELEASE.

INSTRUCTIONS:

- To display a larger photo of an image, click on the image below.
- To display a descriptive label of an image, pause your pointer on the image.

Male on pole

Male on pole

Male on pole

Male rioter

#1

#2

#3

#4

Female in bra

Female in bra


#5

#6

#7

#8

#9

#10

#11

#12
Appendix C

Interview Guide

Introduction

My name is Anna Levy, a Ph.D. student at Penn State College of Information Sciences and Technology, and I am currently engaged in collecting data for a thesis on the history of design, development and implementation of the State College Borough government website, from 1997 to present. As part of this process, I am looking to gather insights from people from multiple perspectives who participated in iterative design and development of the website over the years.

I thought you might be a great resource to speak to the history of the Borough government website. Before we begin, do you have any questions I can answer in regards of this research project?

INTERVIEW QUESTIONS

1. Could you tell me a bit about yourself and your role in the State College Borough government?

2. Were you involved with the original website design and implementation? What is your current role in regards to the website design and/or management?

3. To your knowledge, what company and/or individual could be credited with the website’s original design and implementation (i.e., according to CivicPlus, State College Borough Government has become a CivicPlus’ client in 2005)? Who would you recommend as a possible informant for this research?

4. What need(s) was this government organization hoping to fulfill by creating a website? How these needs may be different now? In the future?
5. What inspired (e.g., federal information policy, other local government websites) this municipal government to make a decision to place data on the World Wide Web? When did it happen?

6. What was the primary purpose (e.g., information dissemination, citizen education, economic development, service delivery) of the website at the time of its launch?

7. What is the primary purpose(s) of the website at present?

8. How do you envision the Borough’s e-government in the future? Would there be more e-participation components embedded in the website design?

9. What process has been used to select information that would be presented on the website? Were there any changes over the years?

10. What is the current web content strategy?

11. Who is responsible for the website content management? Does the website design enable quick editing by non-designers?

12. What department(s) manages its own web content and stores official government public documents?

13. What department(s) is responsible for proposal of key design guidelines?

14. What content /information was originally available on the website (e.g., council meeting information, email access to government staff, parks and recreation activities, local government employment information, permit information)? How was this content changing over the years?

15. Are there any opportunities for community members to contribute (e.g., blog, comments, email) to discussion about design and functionalities of the website?

16. Does the website provide a design solution (e.g., accessible web pages) to mitigate online barriers faced by people with disabilities? Non-English speaking residents? If it doesn’t, are there any plans in this respect?

17. How do the stakeholders know if the website is beneficial to its intended end users, the State College Borough residents?

18. Is there web privacy policy available for the Borough’s website users? Other web policies?
19. What systematic tracking mechanisms (if any) exist to determine how many or what types of users access information on the website, or what kind of information users seek?

20. Are there web usage log records available for review in the course of this research project?

21. Where is the website’s traffic coming from? Why is traffic coming from those sources? Is it because of link partnerships? Publicity? Blog mentions? Comments?

22. How can traffic now be compared to a historical average? Higher? Lower?

23. What keywords does the website rank for?

24. What, specifically, are those ranks per keyword across all search engines?

25. Is there historical data to show how those ranks have changed?

**Closing**

I would love to continue to engage with you as the process moves forward. May I contact you in the future if other questions/thoughts come up regarding public participation in design and content development of the Borough website?
Appendix D

Technology Committee Recommendations (February 27, 1997)

Borough of State College
interoffice
MEMORANDUM

to: Peter S. Marshall, Borough Manager
from: Carl R. Hess, Technology Committee Chair
subject: Technology Committee Recommendations
date: February 27, 1997

The Technology Committee met on February 21, 1997 to discuss and formulate recommendations on three items: 1) proceeding with implementation of GIS by joining Penn State in digitizing the aerial photos taken in 1995; 2) implementing a pilot optical imaging project in the administration department; 3) implementing the migration of the financial management software from the Data General to the network server. At the end of the discussion that is summarized below, the Committee unanimously endorsed the following recommendation:

1. Proceed in conjunction with Penn State to digitize our aerial photos;
2. Implement a pilot optical imaging project using the purchasing office and police accident records;
3. Initiate planning for implementing optical imaging in the administration department in 1998;
4. Rewrite the financial management software and move it from the Data General to the network server; and,
5. Acquire a second server.

The Committee believes these actions can be completed within the amount of funds budgeted for technological improvements in the 1997 Borough budget. The proposed budget for these activities is as follows:

1. Digitizing aerial photos $110,439.00
2. Optical Imaging demonstration project $ 30,000.00
3. Rewrite financial management software $ 10,000.00
4. Acquire second server $ 13,100.00

Total $163,539.00

(A total of $190,000.00 is budgeted the technological improvements line and computer expenses line item in the Finance Department budget. Additional funds would be available in the Finance Department budget computer equipment maintenance line item when the Data General was taken off line.)
Strategic Direction for Information Systems

The discussions on what technological improvements to recommend was framed in the context of the status of implementing the Strategic Directions for Information Systems prepared for the Borough in 1994 by ICA. We have made substantial progress on implementing 3 of the 6 major system improvements listed in this plan: 1) installation of the core network; 2) replacing the tax system; and 3) replacing the police minicomputer system. Each of these improvements is either complete or underway with funding in place.

The recommendations made by the Committee in this memo address the other three system improvements: 1) implementing GIS; 2) imaging and records storage; and 3) replacing the Data General financial systems. The Committee believes if its recommendations are approved, by the end of 1998 we will have substantially completed all the major information system improvements identified in the 1994 Plan.

GIS

In 1995, Centre County had aerial photos taken for the entire county. In order to obtain more detailed information, Penn State and the Borough issued their own contract and had photos of their lands taken at a lower altitude than other parts of the county. The next step in the implementation process is to convert the photos to digital format. Until this occurs, the aerial photos are of extremely limited value. The longer we delay in completing the conversion, the more out-of-date these photos become, resulting in lower benefit and more time and costs associated with up-dating them.

Penn State staff, working with Borough engineering staff, prepared an RFP to convert the photos to digital format. Following review of proposals and interviews with selected vendors, Penn State chose ADR of Pittsburgh as the successful proposer. The cost to the Borough for its portion of the proposal by ADR is $110,439.00, Penn State’s cost will be between $125,000.00 and $150,000.00, depending on the final scope of services procured. Should we decide to join Penn State in this effort, we would be dealing with the University and not the vendor, as the RFP included the Borough’s portion as an alternate in Penn State’s contract with ADR. We would reimburse Penn State for the work done under its contract. Although Council action is not required to award a contract, Council should be made aware of this project and authorize staff to notify Penn State of the Borough’s interest in its portion of the work.

Details on the product we would receive if we join with Penn State are summarized in the attached memo.

The Committee discussed the value added to Borough operations by implementing GIS, particularly in comparison with what is available through the current electronic map. The initial product will be a ready-to-use base map of the Borough and campus that includes all of the features listed in the attached memo. Not only will this map include more information, the information included will be more accurate than what is shown on the current map. This higher
The estimated cost to install a second server is $13,100.00. This includes $8000.00 to acquire a Gateway G6-200 PC, $99.00 for the extended maintenance agreement, and approximately $5,000.00 to integrate the PC into the network (including an additional hub).

**Internet Connection and Staffing**

In addition to these four projects, the Committee believes the Borough should obtain access to the Internet. Following our meeting late last year with George Thurman to discuss getting the Borough up on the County Store, Marge Johnson contacted Vicon about Internet access. While we are awaiting a specific proposal from them, we estimate the cost for Internet access will be $4,200.00 per year plus $1,500.00 start up costs (for additional software and hardware). Sufficient funds are available for this project in the technology improvement line item.

We have had discussions about the capacity of existing staff levels to take on these additional projects. Since much of the responsibilities for installing and maintaining information systems falls on Marge Johnson’s shoulders, I asked her to comment on the staff capacity question.

To a great extent, the answer to the question depends on timing. Marge expects an extraordinary amount of her time to be consumed by the conversion to CRIMES III (she is still optimistic CRIMES III will happen within the next couple of months!). The implementation of the Mobile Computer Terminal project and the bulk of the work involved - will not occur until next year. Joe will have the brunt of GIS, Linda the tax system, and John Marchek (I assume) for the financial system, although much of the network part of that project will fall to Marge or me. The responsibility for the demonstration projects for imaging and the Internet/website will probably fall to Ernie and Marge. As Marge noted, they're all such exciting and potentially beneficial projects but, yes, it's a lot to expect of existing staff along with day to day workloads.
Appendix E

Technology Committee Recommendations (May 16, 1997)

Borough of State College
interoffice
MEMORANDUM

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to: Peter S. Marshall, Borough Manager
from: Carl R. Hess, Technology Committee Chair
subject: Technology Committee Recommendations
date: May 16, 1997

The Technology Committee met on April 23, 1997 to discuss and formulate recommendations on three items: 1) connecting to the Internet; 2) adding a second server to the computer network; and 3) establishing a computer linkage with the Osmond Street Service Building. At the end of the discussion that is summarized below, the Committee made the following recommendations:

1. Accept RBA’s proposal for an Internet e-mail connection using the SMTP option;

2. Implement Link Computer’s proposal to replace the existing server with two high end Compaq servers, retaining the current server for reuse as outlined below;

3. Establish a computer linkage with the Service Building using the ISDN solution recommended by Link Computer.

The Committee believes these actions can be completed within the amount of funds budgeted for technological improvements in the 1997 Borough budget, while retaining an adequate level of funding for the imaging pilot project in the Administration Department. The proposed budget for these activities is as follows:

1. Internet E-Mail Connection $ 6,054.00
2. Installing two servers $ 37,927.00
3. Connection to the Service Building $ 4,157.00
Total $ 48,138.00

(A total of $186,666.41 remains available in the technological improvements line item. Additional funds sufficient to cover the cost of the connection to the Service Building are available in the Central Garage budget.)

**Strategic Direction for Information Systems**

Each of these recommendations represents an enhancement to the Borough’s computer network. They will allow us to send and receive e-mail to locations outside of the municipal building using the Internet. They will build in redundancy in the servers, the engines that drive the network, preventing down time and data loss should one of the servers fail for any reason. They will establish a data link between our downtown and Osmond Street facilities, accommodating the direct exchange of information between the two sites via our network.
Internet Connection

The Borough has received prices from Vicon and RBA on options for connecting to the Internet. The Vicon proposal was incomplete. In addition, Vicon has no experience working with GroupWise, the e-mail software we use on the computer network.

RBA provided prices on two options. The Committee's recommendation is to accept the SMTP (Simple Mail Transfer Protocol) option. This would allow e-mail from external sources to be routed from RBA to the Borough's server and then directly to the GroupWise mailbox of each individual on our network. The end user would receive these messages as if they were sent by someone within the Borough building. It would also allow all users of our network to send mail to external locations directly from their computer terminals.

This option includes a direct connection to the Internet for up to 20 concurrent users.

At $5,709.00, the installation costs for the recommended option are $157.00 higher than the other option. Additional costs for the recommended option include one telephone line (at a cost of $15.00 per month) and an installation fee of approximately $345.00 plus $205.00 per month fee for an Internet account (including our domain name www.statecollege.pa.gov). (The other option required two additional telephone lines, a dial up account with an Internet provider and $200.00 per year fee for e-mail access through RBA.)

Unlike the recommendations on the second server and service building connection, the Committee was not unanimous on the recommendation on Internet connection. While we all agreed that we should connect, there were some differing opinions on the details of how this connection would occur. For example, Ron Davis believed that we should explore other options, such as connecting through Penn State, and talking further with Vicon before accepting RBA's offer. We are continuing our dialogue with Vicon as well as other Internet providers and have not finalized our recommendation on which Internet provider to use. Ron also wondered how important it was for external e-mail to go directly into an end user's GroupWise mail box while other committee members believed that the ease of use for the end user was paramount and the interface with GroupWise was very important. We can discuss the pros and cons of the details when we meet with you to review this memo.

Acquiring a Second Server

In early March you approved the Technology Committee's recommendation that we acquire a second server to protect against down time and data loss in the event the current server goes down for any reason. As you know, the network operates on a single IBM Pentium-90-based PC. Several pieces of software are loaded on this hardware, including the network operating system,
Appendix F

Pending/Proposed Projects (January 29, 1998)

Borough of State College
interoffice
MEMORANDUM

to: Technology Committee
from: Carl R. Hess, Planning Director
subject: Pending/Proposed Projects
date: January 29, 1998

Our committee was established to identify technological innovation that could benefit the organization, assure compatibility/interoperability among systems, and maximize our return on systems. As you could garner from my memo on 1997 accomplishments and 1998 projects, I believe we have done a lot. But much remains before us.

I felt compelled to compile a list of pending and/or proposed projects. I’m afraid I’ll lose track of projects if I don’t keep some type of master list. Let me know what’s missing from the list or erroneously included on it. I’m intentionally leaving CRIMES and tax system upgrade off the list because they are nearing completion.

Mobile Data Terminals (1998)

- Optical Imaging (multiple projects -- tax, CRIMES III, admin.) (1998 and beyond)
- GIS (1998 and beyond)

Fixed Asset Management/Inventory Control (1998)

Intranet (1999)

Time Management Software (1998)

- Forms on the Internet (i.e., our home page) (1998)
- Improving our homepage (1998 and beyond)

Disaster Planning/Off-site Storage (1998/99)

Upgrade to fast ethernet (1999)

- Paperless workflow (related to forms on Internet and imaging) (1999 and beyond)

Migration to NT for the server OS (2000 or later)

Centralized property file (is this a stand alone project or elements of tax, CRIMES, GIS)
Reorganization of the computer room (1998/99; level will depend on outcome of Town Center discussion)

Presentation facilities (1998/99; level will depend on outcome of Town Center discussion)

Training (establishment of a systematic program for improving employee skills) (1998 and beyond?)

Migration to an integrated office suite (2000)

Improvements in security precautions (NOW!!!)

Police Dept. Database Automation project which will be a network of all Centre County law enforcement agencies (jail, probation, courts, police depts, etc). It is already underway, so call it a 1998 project.

/ Complaint Management Software