International Journal of Public Administration, 34: 935–945, 2011
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ISSN: 0190-0692 print / 1532-4265 online
DOI: 10.1080/01900692.2011.616988

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E-Governance Approaches at the Local Level: A Case Study in Best Practice

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In the fall of 2009, the city of Prague set out to conduct a critical analysis of its overall performance by closely examining the performance of the city's districts. In conjunction with the E-Governance Institute at Rutgers University, Newark, New Jersey, and the Public Technology Institute in Washington D.C., a quantitative survey of all 22 administrative districts' e-governance and online presence was conducted. Guided by the survey results, qualitative case studies of the top five performing districts were carried out in January 2010. The underlying goal of this research project is to further improve e-governance in Prague and foster a greater understanding of successful digital government initiatives. The findings of the survey and the case studies are presented, and key findings in the case studies are highlighted.

Keywords: e-government, municipality, performance, privacy, usability, content, services, and citizen participation

INTRODUCTION

As new and innovative approaches in the use of technology continue to arise, municipalities throughout the world are taking advantage of these opportunities to examine and create new approaches to governance. The utilization of information and communication technologies (ICTs), such as websites, by municipal and state governments has fostered renewed interest in how government engages citizens, sets priorities, and delivers services. The following research study focuses on the accelerated development of e-governance by the city of Prague, Czech Republic.

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The city of Prague has made notable progress in their e-governance performance over the past decade—continuously taking advantage of new technologies and website services. In the fall of 2009, led by Chief Information Officer Václav Kraus, the city of Prague set out to conduct a critical analysis of their overall performance by closely examining the performance of the city's districts. In conjunction with the E-Governance Institute at Rutgers University, Newark, and the Public Technology Institute in Washington D.C., the city executed a quantitative survey of all 22 administrative districts' e-governance and online presence. Guided by the survey results, qualitative case studies of the top five performing districts were carried out by the Rutgers E-Governance/PTI research team in January of 2010. The findings of the survey and the case studies are presented below, highlighting the success factors and barriers encountered in e-governance by the top-ranked districts within Prague.

Twenty-two Districts

Prague is divided into 22 distinct and autonomous administrative districts that develop and maintain their own websites and are responsible for providing a broad range of services and functions. Table 1 lists the 22 districts along with the area and population. Governance challenges are rooted in the autonomy and inherent aim to remain distinct from district to district. The districts vary in size and overall demographics, which in part can be related to the variation in e-governance practices and performance. Interestingly, the highest performing districts in the quantitative survey were not necessarily the largest, most populous, or the most economically robust. The quantitative survey found variation in the resources and demographics of high scoring districts, underscoring the belief that all districts and municipal governments can excel at e-governance.

Prague's district survey and its resulting rankings provide an incentive for local officials to improve performance, but also enable districts to compare themselves to cities around the world. The city of Prague's central IT department provided significant leadership support and encouragement for continued performance improvement of the city and districts' efforts. Also critical to this research study, and moving forward from the findings, has been support from the city Mayor and city government officials for the ongoing research analysis of e-governance performance. Strong administrative support is critical to e-governance performance as has long been found in research studies (Brown & Brudney, 2004; Dawes, 2008; Garson, 2004; Reed, 2005).

TABLE 1
Prague Administrative Districts - Demographics

	Area (Hectares)	*Population*
Districts	**49,603**	**1,233,211**
Praha 1	554	30,343
Praha 2	418	48,575
Praha 3	648	72,991
Praha 4	2,419	130,287
Praha 5	2,750	83,573
Praha 6	4,151	100,600
Praha 7	710	40,843
Praha 8	2,180	102,021
Praha 9	1,331	50,364
Praha 10	1,860	111,685
Praha 11	980	78,519
Praha 12	2,331	54,876
Praha 13	1,323	58,204
Praha 14	1,351	44,639
Praha 15	1,024	29,902
Praha 16	931	8,201
Praha 17	326	25,365
Praha 18	561	16,433
Praha 19	599	6,149
Praha 20	1,693	14,571
Praha 21	1,015	9,209
Praha 22	1,561	6,812

Demographics for the city of Prague's administrative districts (Czech Statistical Bureau, December 2008)

DESIGN AND METHODOLOGY

The study employs a mixed methodological approach where a quantitative survey assessed the practice of digital governance in the 22 districts, and qualitative case studies examine the best practices. The city of Prague's Central IT department implemented the quantitative survey and the results were compiled and best practices identified by the E-governance Institute. In addition, the E-governance Institute conducted interviews with 13 local government IT managers in Prague to develop the case studies. The interview protocol overview is provided in the Appendix, which highlights the introductory questions for each district. Follow-up questions were asked based on initial responses.

The qualitative aspects of the research are consistent with credible qualitative research techniques (Denzin & Lincoln, 2000). However, the nature of the study limits its generalizability. Specifically, the city was not identified randomly; rather, it was selected purposively because of the priority Prague places on improving its digital governance capabilities. Despite the selection bias and qualitative nature of the interviews, the research employs quantifiable methods for evaluating municipal government websites, which aim to triangulate the research adding to its credibility while acknowledging its limits.

Because digital governance includes both digital government (delivery of public services) and digital democracy (citizen participation in governance), the survey analyzed privacy/security, usability, and content; the type of online services currently offered; and citizen response and participation through websites established by the districts. The survey utilized the Rutgers E-Governance Survey Instrument (Holzer & Kim;, 2004, 2008), which is comprised of 98 scaled measures and five categorical areas: (i) privacy/security, (ii) usability, (iii) content, (iv) services, and (v) citizen participation. The survey instrument has been tested and utilized in previous e-government studies (see Melitski et al., 2005, Carrizales et al., 2006,) with reliability and methodology grounded in literature that shows expected performance development at the municipal level. Research utilizing similar methodology has also been presented in studies outside of e-government performance, but also in areas of government communications and performance (Schwester, Carrizales, & Holzer, 2009).

Among the 98 measures used in the instrument, 43 were dichotomous (as "yes" or "no"), and each of the five categories consisted of 18 to 20 measures. For questions that were not dichotomous, each measure was coded on a four-point scale (0, 1, 2, 3). All the websites were evaluated in the Czech language and each website was

assessed by two evaluators to ensure reliability. The category of privacy/security examined privacy policies and concerns related to authentication. Usability involves traditional webpage forms and search tools. Content addresses access to contact information, public documents, multimedia, and time-sensitive information, as well as access for those with disabilities. Likewise, (interactive) services refer to user ability to purchase or pay for services and apply or register for district events or services online. Citizen participation measures government's engagement with citizens and provision of mechanisms for citizen participation in government online. The categories are explained further in the following sections.

PRIVACY/SECURITY

Privacy and security issues are increasingly essential component of e-government research (Hoffman et al., 1999; Chadwick, 2001; Miyazaki & Fernandez, 2001; Bélanger, Hiller, & Smith, 2002; Bélanger & Hiller, 2005). The past decade has witnessed substantial growth in the adoption of e-government across the world but these initiatives need to be trusted and embraced by citizen users. Many citizens and advocacy groups are increasingly growing skeptical of the invasion of their privacy by government websites that requires users to submit their personal information apart from making use of tracking tools and cookies. According to the Hart–Teeter survey conducted by the General Accounting Office (GAO) in the United States (2001), citizens have confidence in the potential of e-governance but many have "concerns about sharing personal information with the government over the Internet, fearing that the data will be misused and their privacy diminished" (GAO, 2001, 14). To gain citizens' trust and encourage them to use government websites, without such concerns regarding privacy, websites need to provide privacy policies on every page that requires data.

The analysis of privacy and security addressed two key areas: privacy policies and user authentication. In examining district privacy policies, it was first determined whether such a policy was available on every page that required or accepted data, and whether or not the word "privacy" was used in the link to such a statement. The research sought to determine whether privacy policies identified the agencies collecting the information, and whether the policy identified exactly what data were being collected on the site.

The survey determines if the website explained the intended use of data collected on the site, such as use by or sale to third-party organizations and whether the site offered a user option to decline disclosure of personal information to third parties, including other district agencies, state and local government offices, or private sector businesses. Also assessed, was the provision of the option of digital signatures to authenticate users and whether public or private information was accessible through a restricted area requiring a password and/or registration. An additional concern was that public agencies might use their websites to monitor citizens or create profiles based on information they access online.

Usability

The usability and accessibility of websites are important aspects to be considered in the provision of online government services. Usability is defined as the degree of comfort of citizens using the websites (Krug, 2005). Usability involves the websites' adoption of the human-machine interface's usability concept and refers to the speed and ease of usage of websites (Nielson, 1994). According to Brinck et al. (2001), a website is considered usable if it enables the users to accomplish their goals quickly, efficiently, and with simplicity. Cappel & Huang (2007) consider usability of a website as representing clarity, simplicity, consistency and ease of use. The International Organization for Standards defines usability as the extent to which a particular website can be utilized by specific users for specific purposes in an efficient, effective, and satisfactory manner (ISO, 1998). Website usability is essential for both public and private organizations to enable channels of communication and improve relationship between government and citizens. A good usable website reduces the necessity for training, support, maintenance costs and improve user satisfaction and performance (Verma & Ornager, 2005).

The research also examined the user-friendliness of traditional web pages, forms, and search tools. We examined each district's website in terms of the screen length and availability of alternative versions of long documents, such as PDF or DOC files. The survey looked for targeted audience links or channels that customize the website for specific groups like citizens, businesses, or other public agencies. Also, issues of branding and structure (e.g., consistent color, font, graphics, and page length) and if the website clearly described the system hardware and software requirements were examined.

The survey checked online forms to determine their usability in submitting data or searching district websites; in particular we examined issues such as whether pages on forms provided additional information about how to fix user errors; for example, did the user have to re-enter information or did the site flag incomplete or erroneous forms before accepting them? Additionally, did the site give a confirmation page after a form was submitted, or did it return users to the homepage? Finally, the usability analysis addressed search tools on district websites to determine whether help searching the site was available or whether the search scope could be limited to specific site areas. Lastly, the research examined advanced search features like exact phrase searching, the ability to match all or any words, and the site's ability to sort search results by relevance or other criteria.

Content

One of the primary purposes of government websites, especially in developing nations is to provide relevant and sufficient informational content to citizen users. E-Government holds tremendous potential in enhancing the transparency and accountability of government towards its citizens, thus enabling government to work more efficiently and effectively (Carter & Belanger, 2005). In addition to usability, the usefulness of a website is dependent on its content, which plays an important role in user-satisfaction.

Many researchers consider e-governance as evolving through various stages from simply posting information online to utilization of websites for online citizen participation (Layne & Lee, 2000; Holden, 2003; Seifert, 2003; Reddick, 2004; West, 2005; Bélanger & Hiller, 2006; Dawes, 2008). Although these models differ considerably from each other, all agree on informational content being the initial stages in any form of e-government adoption. More recently, government website design are taking a citizen-oriented approach, combining content and services in anticipation of the needs of government websites users.

In the category of content, the following areas were examined: access to contact information (specifically, information about each agency represented on the website), public documents, and access for those with disabilities, multimedia materials, and time-sensitive information. Initially, surveyors looked for a schedule of agency office hours and availability, along with online access to public documents, a district code or charter and/or agency mission statements and the minutes of public meetings. It was also determined whether users could access budget information and publications, whether the sites offered content in more than one language, as well as access for disabled users. To gauge the use of multimedia, we examined each site for the availability of audio or video files of public events, speeches, or meetings. The time-sensitive information examined included the job vacancies, calendar of community events, and the use of a district website for emergency management and/or as an alert mechanism.

Services

E-Government promises the change from the traditional bureaucratic paradigm—which prioritizes standardization, departmentalization, and operational cost-efficiency—to a new paradigm emphasizing coordinated network building, external collaboration, and citizen service (Ho, 2002). According to Pardo (2000), many government websites have begun to provide online service initiatives through websites depending on their goals and primary focus. Some of these common initiatives are mechanisms that enable citizens to comply with state and federal rules on such formalities as drivers' licenses or business licenses; access to special benefits like welfare funds or pensions; and a network across various government agencies to enable collaborative approaches to serving citizens. Websites have a great potential in integrating online services and providing a higher quality of service to citizens (Gant & Gant, 2002).

Two different types of online services were studied: those that allow citizens to interact with the district, which can be as basic as forms for requesting information or filing complaints; and those that allow users to register online for district events or services. Local governments worldwide provide advanced interactive services through which users can report crimes or violations, customize district homepages based on their needs (e.g., portal customization), and access private information like court, educational, or medical records online. The presence of such services was also evaluated.

In terms of enabling citizens to register online for services, many districts allow online applications for a range of services as diverse as building permits and dog licenses. Local governments are also using the Internet for procurement, allowing potential contractors to access requests for proposals or even bid online for district contracts. Some of these governments also list the total number of bidders for a contract online and in some cases even the contact information for bidders. Finally, surveyors assessed whether districts had developed the ability to accept payment for online services and taxes on their websites, along with transactional services such as online payment of public utility bills, parking tickets, and registering or purchasing tickets online for events in arenas.

Citizen Participation

Holzer and Kim (2008) suggest that e-governance involves both the components of e-government (delivery of public services) and e-democracy (citizen participation in governance). E-democracy is the capacity for ICTs to enhance the degree and quality of public participation in government. ICT holds the possibility for direct-democracy on a large scale, allowing for greater government transparency and openness, leading to a better informed citizenry. Government websites are particularly recognized as major drivers of e-democracy as they have the potential to provide online democratic practices such as voting, deliberation, or decision-making (Riley, 2003). ICTs also help citizen groups to conduct research online, interlink with online communities, and host their own websites on which to post opinions (Bridges.org., 2002).

This new focus on e-democracy can be attributed partly to the lack of performance by the old technologies, i.e., where early discussions of the technology-democracy relationship highlighted the potential of telecommunications, with an emphasis on cable television and telephone conferencing Internet (Bellamy & Taylor, 1998; Browning, 2002; Gattiker, 2001; Kamarck & Nye, 1999, 2003; Loader, 1997; Westen, 1998, 2000; Wilhelm, 1998; Witschge, 2002).

For the Internet to significantly enhance citizen participation, the e-government portal needs to be sufficiently equipped with citizen participation tools such as bulletin boards, feedback forms, policy forums, and performance reporting systems. Online discussion forums are important tools of public consultation on policy issues. An online discussion forum refers to that component of the city website where the city arranges public consultation on policy issues and citizens participate in discussing those specific topics. The concept of e-bulletin boards has enabled a wide scope of discussion among citizens, ranging from formal to informal methods. In a study of interactivity by Ferber et al., (2005), bulletin boards form a major component of enhancing the interactivity of a government website. The municipal website should have online bulletin board or chat capabilities for gathering citizen input on public issues. E-meetings refer to the real-time discussions that occur at specific timings in a synchronized way so that participants can exchange opinions at the same time. E-petition refers to the formal request to a city council or a government agency, signed by a number of citizens online, to raise issues of concern. Along with the above-mentioned tools, civic engagement should also involve channels for online decision making such as e-citizen juries and e-referenda. Electronic citizen juries consist of a group of representative citizens who take evidence about issues over an extended period, deliberate online, and recommend conclusions to government. E-referenda or online referenda involve asking the whole population to vote online on issues, thereby introducing or amending policies (Holzer & Kim, 2008).

In citizen participation, government engagement with citizens and provision of mechanisms for citizen participation in government online was evaluated. Surveyors examined whether local governments offer current information about district governance online or through an online newsletter or e-mail listserv, and whether they use Internet-based polls about specific local issues. Likewise, the research sought to determine whether communities allow users to participate and view the results of citizen satisfaction surveys online. For example, some districts are using their websites to measure performance and publish the results of performance measurement activities online. Still others use online bulletin boards or other chat capabilities to gather input on public issues. Such online bulletin boards offer citizens the opportunity to post ideas, comments, or opinions without stipulation of specific discussion topics, although in some cases agencies were attempting to structure online discussions around policy issues or specific agencies.

RESULTS

The following section presents the results for all the evaluated district websites in the project. Table 2 provides the rankings for 22 district websites and their overall scores.

TABLE 2
Overall Rankings for Prague Districts in Digital Governance

Rank	*Districts*	*Score*	*Rank*	*Districts*	*Avg Score*
1	District 1	41.80	6-10	2,4,10, 11, 17	31.04
2	District 16	41.63	11-22	3, 7, 8, 9, 10, 13, 15, 18, 19, 20, 21, 22	24.69
3	District 6	39.26			
4	District 5	36.96			
5	District 14	35.20			

The overall scores reflect the combined scores of each district's score in the five e-governance component categories. The survey results indicate that all the 22 districts selected for the survey have developed official websites, and the average score for digital governance in districts is 29.38 versus the highest possible score of 100 for any one website. District 1 received a score of 41.80, the highest ranked district website, closely followed by district 16, with a score of 41.63. District 6 had the third highest ranked website with a score of 39.26, while district 5 and district 14 ranked fourth and fifth with scores of 36.96 and 35.20, respectively. These are in line with worldwide mean scores of 33.37 (Holzer & Kim, 2008).

Privacy/Security

Results indicate that district 5, district 21, district 16, district 17, and district 13 are top-ranked districts in the category of Privacy/Security. District 5 is ranked first with a score of 12.80, while district 21 follows in the second position with a score of 8.40 points. District 16 ranked third with a score of 5.20, while district 17 and district 13 share the fourth position with a score of 3.60 points. Table 3 summarizes the results for all the districts evaluated in this category. The average score in this category is 2.15.

Usability

Results indicate that district 16, district 12, district 8, district 1, and district 7 are top-ranked districts in the category of Usability. District 16 is ranked first with a score of 15.0, and district 12 ranked second with a score of 14.69 points. District 8 ranked third with a score of 14.38, while district 1 and district 7 share the fourth and fifth positions

TABLE 3
Results in Privacy/Security

Ranking	*Prague District*	*Privacy*
1	District 5	12.80
2	District 21	8.40
3	District 16	5.20
4	District 17	3.60
4	District 13	3.60

TABLE 4
Results in Usability

Ranking	*Prague District*	*Usability*
1	District 16	15.00
2	District 12	14.69
3	District 8	14.38
4	District 1	13.75
5	District 7	13.13

TABLE 5
Results in Content

Ranking	*Prague District*	*Content*
1	District 1	12.40
2	District 6	11.60
3	District 5	10.40
4	District 16	10.00
5	District 14	9.80

with scores of 13.75 and 13.13 points, respectively. Table 4 summarizes the results for all the districts evaluated in this category. The average score in this category is 11.70.

Content

Results indicate that district 1, district 6, district 5, district 16, and district 14 are top-ranked districts in the category of Content. District 1 is ranked first with a score of 12.40, and district 6 ranked second with a score of 11.60 points. District 5 ranked third with a score of 10.40, while district 16 and district 14 share the fourth and fifth positions with scores of 10.0 and 9.80 points, respectively. Table 5 summarizes the results for all the districts evaluated in this category. The average score in this category is 7.48.

Services

Results indicate that district 1, district 14, district 16, district 11, and district 4 are top-ranked districts in the category of Services. District 1 ranked first with a score of 9.83, and district 14 ranked second with a score of 8.31 points. District 16 ranked third with a score of 7.80, while district 11 and district 4 share the fourth position with a score of 7.46. Table 6 summarizes the results for all the districts evaluated in this category. The average score in this category is 4.98.

TABLE 6
Results in Services

Ranking	*Prague District*	*Service*
1	District 1	9.83
2	District 14	8.31
3	District 16	7.80
4	District 11	7.46
4	District 4	7.46

TABLE 7
Results in Citizen Participation

Ranking	*Prague District*	*Participation*
1	District 6	8.00
2	District 1	5.82
3	District 14	5.27
4	District 2	4.95
5	District 12	4.00
5	District 19	4.00

Citizen Participation

Results indicate that district 6, district 1, district 14, district 2, district 12, and district 19 are top-ranked districts in the category of Citizen Participation. District 6 ranked first with a score of 8.0, and district 1 ranked second with a score of 5.82 points. District 14 ranked third with a score of 5.27, while district 2 ranked fourth with a score of 4.95. District 12 and district 19 share the fifth position with a score of 4.0 points. Table 7 summarizes the results for all the districts evaluated in this category. The average score in this category is 3.07.

DISCUSSION

The following discussion highlights the key findings of the top five districts based on the both the quantitative survey results and case studies of best practices (as shown in Table 8). Five districts were reviewed through a qualitative case study visit of their district's e-governance administrators. The interview protocol can be found in the Appendix.

TABLE 8
Key Findings

1	Project management and service agreements among all departments in the district helped foster development and implementation, with attention to quality control of web page changes.
2	Routine citizen feedback helps to continually improve the design and types of service provided by the website.
3	Need to have a dedicated group of people working towards e-governance across all departments within the district; not just the IT department.
4	Citizen influence in design and usability is critical for overall functionality.
5	The need for governmental leadership and support of initiatives is critical for the successful implementation of e-governance.
6	Discussion with district employees before the introduction of new programs helps in development and overall implementation.
7	Succession planning among changing leadership
8	High expectations for privacy and security
9	The personal relationship of the e-governance champion in the development and implementation of initiatives with technological requirements is important.
10	Working with limited resources from the inception creates a culture of being able to accomplish any idea with the resolve that it can get done through research and hard work.

The case studies took place over a week in the winter of 2010 and involved two researchers meeting with, on average, four district representatives. The representatives typically included the IT manager, website administrator, district manager and an elected official of the district. For each best practice, a brief introduction to the district is provided below, followed by key findings that represent success factors, and the district's rationale for their e-governance performance.

District 1

Prague district 1 is a governing unit of average size, 30,343. The district website was ranked highest among all district websites in the city of Prague, although their efforts to achieve excellence in e-governance performance are relatively recent. The history of the district 1 website is linked to the city's early e-government programs. Initially, the city of Prague provided services where they hosted district websites, and this arrangement was the source of the first website for district 1. The initial site consisted of a very basic framework through which the district could post some content and links. Eventually, district 1 outgrew the city-hosted site, and the district decided to develop its own website.

The first district website was created using a system that was purchased by the ICT department to maintain the district's internal Intranet. However well intended, the Intranet management system was not designed for creating external websites for citizen use, and while it was eventually replaced, this was an important step, as it meant the district was wholly responsible for managing and maintaining its websites. Early city-wide evaluations that predate this research did not rank district 1's website particularly well, and the district began a process of revising its entire web presence. The first phase of the redesign involved developing a "content team" that is now responsible for the development and continued implementation of web services and programs.

Findings: Collaboration and Citizen Participation

Overall, Prague district 1 was not only a top performer in Content and Service, but collectively had the highest e-governance score for all districts. Many of the critical findings that will be discussed in the following cases can also be associated with district 1 as well, but two key findings were noteworthy. First, the approach taken by district 1 was very collaborative and involved individuals throughout the district as well as external vendors on their "content team." Project management skills were utilized to establish service agreements throughout district departments to ensure quality and overall performance. Although many districts may have similar "teams" for web services and IT management, the formalization of the team with regular meetings and collaborative agreements that derive from/with them highlight that potential means to success in e-governance efforts.

Second, the institutionalization of citizen feedback was a critical component to the success and continued improvement of their e-governance efforts. Although the survey data collection was not initiated from the IT department, it did provide beneficial information for the improvement and design of the district website. As such, regularly collected data are an important component in making e-governance a truly functional approach to municipal management by indirectly collaborating with citizens to foster more inclusive, more effective governance.

District 16

Prague district 16 has a population of 8,201. Prague 16 was ranked second overall in the research survey and first in the area of Usability. The district is relatively small and has a similarly small ICT department and budget. This case demonstrates how even the smallest of jurisdictions can develop a quality website while ensuring relevant information is made available to citizens in a user-friendly format. The overall performance of district 16's website ranked second among all districts in Prague, attributable to the unique evolution of their website and overall commitment of the district's leadership to e-governance and online service provision.

Initially, the district government wanted to publish a single site, and district 16's online presence grew from there. The mayor's chief of staff and the district's IT director were responsible for the overall coordination of IT efforts. In addition, they identified an excellent partner to host and help design the site. That contractor helped them create a structure that allowed for growth and decentralized authority.

The authority and structure for e-governance in the district involves two components. The first is the development and day-to-day operation of the website, and the second is the internal operation of communications and Intranet services. The former is provided through the outsourcing of web design and hosting through the private contractor. The content for the website and feel for the website is primarily done in-house as department managers are empowered and given the ability to make changes to the website on their own. The private Internet host that works with district 16 is a relatively small company with one manager responsible for the overall development and maintenance of the technological infrastructure.

Findings: Decentralized Management and Usability

Similar to the efforts of district 1, district 16 has ensured that the entire district's departments and offices are integral players in the day-to-day development of the website. In part, the need to decentralize content management has fostered a

functional and user-friendly website. Each department can access and update the text associated with their offices without requiring daily interaction with the IT department to maintain an up-to-date website. A significant contributing factor in this key finding is the relatively small size of the district and the close relationship each department has with each other and the IT department.

Prague district 16 does not have a formal mechanism for the collection of citizen feedback through regular surveys or polls. The feedback they do receive, however, plays a big part in the design and functionality of the website. The design is underscored by the need to make it user-friendly for residents and visitors. Therefore, any e-mail, phone call or informal communication about an aspect of the website is taken into consideration in terms of continuous development and design.

District 6

Prague district 6 was ranked third overall in the research survey and first in the area of Citizen Participation. Prague 6 is one of the larger districts in the city, with just over 100,000 residents. The website for district 6 can be categorized into three general phases of development. The first period, roughly form 1999–2000, represents little to no dynamics online. The website was static and the underlying goal was simply to have a good website relative to those around the region. During this period, the extent of innovation was relatively low and online services were minimal.

The second period, 2001–2004, can be characterized by the developing relationship between the service provider's webmaster and the district's government officials. Initially, the IT consultant expected hesitation from the district and resistance to the introduction of new and innovative components for the online website. Surprisingly, district officials were very receptive to the new directions and ideas presented, and ultimately are strong advocates of e-governance. A level of trust was built that allowed for the goal that every month a new web section would be added. The district has no specific strategic plan when it comes to ICT and e-governance; rather, an ongoing and growing list of ideas is continually developed and handed over to the web service provider to implement as time allows. This revolving door of ideas and implementation is fluid and is characterized by the current needs and fresh ideas that arise on a day-to-day basis. In their words, "creative processes can't be planned." Creativity is important to innovation, but to sustain performance over time, organizations are often encouraged to engage in a more structured process for generating new ideas, seeking feedback on existing initiatives, and using the feedback as a part of process of continuous improvement.

The organizational staff of the ICT department consists of five individuals working for an outsourced company that is responsible for both the external website with the public and the internal Intranet that district employees utilize. The district e-governance functionality results in the utilization of some 150 online modules which 25 authorized departments and offices are able to utilize and edit as necessary. The interface of the technology provides specific departments the opportunity to update content and, in turn, individual departments are responsible for the information posted. There are no formal approval polices for uploading content, but on occasion department employees check-in with district officials about potential content being updated.

Findings: Administrative Support and Pre-implementation

Although administrative support from elected and appointed officials in e-governance initiatives is critical in all cases, district 6 was a prime example of how support can lead to new and innovative approaches toward governance. For instance, the implementation of MMS-ing requires technological advancements, but also the support from administrative officials willing to incorporate citizens into the governance of the district. Citizen participation is raised to new levels with the opportunity for the public to submit photos of issues/problems throughout the district. However, such efforts are most successful in getting off the ground when the support from top governmental leadership is behind the project.

One of the components of success underscored through the case study of district 6 was the need for proper roll-out of new initiatives in e-governance. As new ideas or innovative features are developed, ongoing discussions must take place with employees in the various affected offices. This greatly improves chances of successful development, design, and implementation of effective new programs.

District 5

Prague district 5 was ranked fourth overall in the research survey and first in the area of Privacy and Security. District 5 has a population of 83,573 and is one of the larger districts in the city of Prague. The history of website initiatives in district 5 began with "technological champions" —elected officials who sought to develop a website that was a leader among the various districts in the city. In addition to efforts toward making the website a leader in the region, the administration also felt it necessary to develop and establish a system of ICT that would be able to overcome the constant turnover among district leadership. Therefore, the history of Prague district 5 e-governance underscores the goals of developing an exemplary website and establishing the necessary infrastructure to sustain it.

The present approach toward Prague district 5 e-governance is a unique and worthwhile partnership of outsourcing for technological services and solutions. Both the Intranet and Internet responsibilities fall to a private company which works closely with the district's leadership

in the day-to-day operations of e-governance. The private company is rather large and responsible for the technological operations of many websites, both public and private. District 5 is the vendor's largest public client, and the vendor is viewed as a partner with the district in working toward continuous improvement, an integral partner in developing an online presence. The vendor is charged with designing the website in collaboration with the ICT commission; however, content for the website is developed by the various district departments. The ICT commission consists of various members of city government, including the mayor's office and the commissioner for ICT. The commission meets monthly on "control days" to create an implementation plan for the month and to discuss new initiatives.

Control day meetings are designed to discuss issues related to the website and other related efforts. The overall leadership of the district is very supportive of all efforts and is committed to the improvement and development of the website and technological services. The ICT commission and control day meetings demonstrate the commitment to continuous improvement, keeping the online interface dynamic by maintaining its innovative characteristics and the ability to relate to different audiences.

Findings: Succession Planning and High Expectations

One of the critical components underscored by the successful e-governance efforts of district 5 is the succession planning that takes place among all the key players involved. Most notably, the executive leadership from the Mayor's office may change, but the collective dedication and motivation to have one of the best websites in the region remains. Furthermore, the ICT commission meetings provide the opportunity for continued discussions about planning and ideas among all key players in the district's e-governance efforts.

Although district 5 has benefitted from an experienced private vendor's privacy and security designs, the ICT and administration have not become complacent. Security and privacy is always a high priority. Depending on a vendor's design is only one part of building and operating a successful website. Discussing the need for a secure website and recognizing the potential dangers with new programs are critical component of district 5's success.

District 14

Prague district 14 was ranked fifth overall in the survey and second in the area of Service. Prague district 14 is a district of average size, with a population of 44,639. The uniqueness of the ICT department for district 14 lies in the internal management, development, and maintenance of all e-governance features for the district. There is no outsourcing of internal or external websites, and the district is dependent primarily on open source and freeware programs and systems for the development of services. District 14 was the only best practice identified in this research to manage all aspects of its website internally.

The history of the website can be traced to initiatives by the current webmaster. The website was initially developed in 1999 and was primarily the work of a single committed individual in the ICT department. The website was presented to the head of the ICT department and then to the mayor, who approved the site and wanted it maintained regularly. As a result, the webmaster's position was created, the site developer was named webmaster, and the original designer remains the webmaster today.

The relationships among the ICT staff, webmaster, and departments have developed into one of flexibility wherein the ICT staff and webmaster implement new ideas and services with minimal specifications from the different offices. Occasionally mandates, like the requirement to place the district budget online, have arisen, yet the website remains a collaboration between ICT and the other departments. Leadership directives are minimal, yet support across the district management is critical. Given the recent mandates from city and government officials, such as the posting of district information for citizen access, district officials have become more interested in e-governance from a content perspective more than a design and functional one. This allows the webmaster the ability to implement new programs and retain control of the design, but does not constrain the development of new and innovative ideas for the district website.

Findings: Technical Champion and Open Source

In this case, as in many others, the e-governance champion of new and innovative ideas was also the technological expert. Therefore, limitations on what might get done were well known. The advocate/webmaster is only constrained by his/her vision; as a result many new innovative services and projects were introduced because the webmaster was capable of developing and incorporating those visions. This case differs from those in which the ideas and visions come from administrators without the technological expertise to know if their ideas are feasible or even communicated accurately.

Unlike many of the cases we have outlined, this district was dependent on open source software and freeware. Internal development of web services utilized programs that kept costs down and required internal upkeep. Therefore, the technological and ICT developments and applications could be addressed of internally, and any problems, solutions, or innovative incorporations of the technology were well under control.

CONCLUSION

The research study has certain limitations that could provide opportunities for future research. First, the methodology could look to expand by conducting focus groups involving citizen users, apart from administrators and IT managers. Most e-government studies tend to concentrate on the administrative perspective of e-government implementation, with less emphasis on satisfaction and trust among citizens. Second, further research should involve more measures on social media engagement incorporated by government websites. The survey instrument utilized for the research is the most comprehensive index for e-government research globally; however, there have been rapid innovations in social media engagement and mobile technologies, that could be evaluated in future research.

As digital government has become more widespread, citizens have come to demand it and managers have become dependent on it to plan, implement, and evaluate public programs. At the same time, information technology in the public sector is a costly venture, and unfortunately there is no guarantee of success. Many management experts estimate that more than 50 percent of government technology projects fail to meet their goals (Dawes, 1998; Brown, 2003). At the same time, it is estimated that by shifting public services online, the cost for providing the services could be reduced by 50–70 percent (Brown & Brudney, 2004). In other words, the use of information technology in public organizations represents a dramatic potential for savings, but the risk associated with unsuccessful implementations is also great.

In conclusion, our research recognizes the high quality of digital governance throughout the municipal districts of Prague. Despite the impressive strides that Prague has made internationally in comparison to other cities, we offer the following recommendations in the spirit of continuous improvement for the municipal districts within Prague based on the survey analysis and case study research. First, districts should consider increasing coordination among the different districts. The city has successfully incentivized the districts by evaluating their e-government initiatives, but more needs to be done to bring them together to discuss common problems and share success stories. They should be encouraged to develop some minimal standards for local government districts, and the Prague city government may be able to play a more active role in helping the districts take advantage of economies of scale and coordinating procurement needs.

Next, reliance on external contractors needs to be monitored. Public agencies that become dependent on technology contractors can lose the ability to set strategic goals and achieve a digital government vision for the future. Public private partnerships are essential for managing public organizations in a global world, as is the need for contractors to remain accountable to public organizations, the elected officials and public employees that lead them, and ultimately the public interest.

Finally, more planning is needed. Thus far, only one of the best practice districts engages in a strategic planning process. A more formal strategic planning process for information technology within the districts should be investigated. This involves developing a technology mission, long-term vision for technology in the districts, establishing goals, and creating measurable objectives that link to performance measurement efforts. A more formal strategic planning and performance measurement process that is integrated into the performance measurement system would allow districts to develop mission statements and establish goals for content, usability, privacy/security, service delivery and citizen participation. The plans could be used to guide public officials in the development of new proposals and in creating new digital government programs. As it stands, the city of Prague has shown great improvements with planning, performance measurement and continued leadership efforts in electronic government.

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APPENDIX A

Interview Outline –: Case Studies

The case studies took place over a week in the winter of 2010 and involved two researchers meeting with on average four district representatives. The representatives typically included the IT manager, website administrator, district manager, and an elected official of the district. Introductory question topics for each district are provided below and follow-up questions were asked based on initial responses, but are not included.

1	Introductory Questions: Roles, Mission, Performance issues, problems, obstacles, success
2	Key Factors: Decision makers, organizational layout, resources
3	Background: History, development, champions
4	Qualitative specific: Factors associated with rankings, Questions of Service, Content, Usability, Security and Citizen Participation (Refer to Methodology for specific aspects of each section)
5	Future: Opportunities, vision, 5-, 10- year plan