

# Reinventing Local Governments and the E-Government Initiative

*The Internet provides a powerful tool for reinventing local governments. It encourages transformation from the traditional bureaucratic paradigm, which emphasizes standardization, departmentalization, and operational cost-efficiency, to the "e-government" paradigm, which emphasizes coordinated network building, external collaboration, and customer services. Based on a content analysis of city Web sites and a survey of Web development officials, this article shows that many cities are already moving toward this new paradigm. These cities have adopted "one-stop shopping" and customer-oriented principles in Web design, and they emphasize external collaboration and networking in the development process rather than technocracy. The article also analyzes the socioeconomic and organizational factors that are related to cities' progressiveness in Web development and highlights future challenges in reinventing government through Internet technology.*

## Introduction

When the Department of Defense invented the Internet in the 1960s as a communication network for defense research purposes, no one could have foreseen how it would transform society three decades later. Today, the Internet has become a part of the daily life of many Americans. Between 1990 and 1998, the number of computers attached to the Internet grew exponentially, from less than 1 million to about 30 million (Comer 1999, 8–11). Between 1989 and 1997, the use of network services from either home or work increased from 6 percent of individuals to 23 percent (Neu, Anderson, and Bikson 1999, 119–23). By 2000, the number of Internet users was estimated to be over 110 million (GAO 2000, 1).

Explosive growth in Internet usage and rapid development of e-commerce in the private sector have put growing pressure on the public sector to serve citizens electronically, which is often known as the "e-government" initiative. The initiative is to provide public services and to empower citizens and communities through information technology, especially through the Internet. In the early 1990s, city governments began to use electronic mail, listserv, and the World Wide Web to deliver information and services. By the end of the 1990s, Web-based services were already an integral and significant part of a new "e-government."

However, the Internet has brought more than a technological breakthrough in service delivery. It has stimulated a transformation in the philosophy and organization of government. This article first sets the stage for an analysis of this trend by contrasting the traditional bureaucratic paradigm with the new e-government paradigm. It then presents an analysis of the official city Web sites of the 55 largest cities in the United States and the results of a survey of city Web masters, which demonstrate that the transformation is already under way. The article also analyzes socioeconomic and organizational barriers to the transformation and challenges government leaders to think differently in the twenty-first century to overcome these barriers.

## A Paradigm Shift of Public Service Delivery in the Internet Age

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## Challenges to the Traditional Model of Bureaucracy

People usually think of government as a hierarchical bureaucracy. This model, commonly known as the Weberian model of organization, focuses on internal and managerial concerns and emphasizes departmentalization, specialization, standardization, and routinization of the production process (Weber 1947; Simon 1976; Schachter 1994). Officials who perform similar functions are grouped and organized into the same administrative unit or department. Each unit is responsible for understanding its clients, assessing the demand for its services, delivering those services, and setting administrative goals for planning and evaluation purposes. To ensure that departmental plans are consistent with each other and fiscally feasible, the budget office, city manager's or mayor's office, and the city council are responsible for centralized control and coordination.

One advantage of the Weberian bureaucracy is that the transaction costs of official communication and coordination are reduced through departmentalization and routinization (Williamson 1975; Galbraith 1977). This approach encourages professional specialization and maximizes efficiency and potential economies of scale (North 1981). Furthermore, through rules, regulations, and hierarchical supervision, the bureaucratic model reduces the chances of unintentional errors, fraud, negligence, and opportunistic behaviors by officials (Williamson 1975; Perrow 1986) and ensures the equitable treatment of clients.

However, the Weberian bureaucracy is often criticized for its rigidity, proceduralism, inefficiency, and incapability to serve "human clients," who have preferences and feelings (Hummel 1992; Rainey, Paney, and Bozeman 1995; Bozeman 2000). A simple example of these drawbacks is the fact that a newcomer to a city may have to fill out many different forms for the utility department, the assessor's office, and the recorder's office, even though the forms ask for similar information, such as name, address, and household characteristics.

The "reinventing government" movement, which started in the late 1980s, is 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. Under the model proposed by Osborne and Gaebler (1992), citizens are regarded as "customers" who become the central focus in designing government service delivery.<sup>1</sup> This model also emphasizes the principles of "catalytic government" and "community-ownership." Public officials are challenged to think about how to empower citizens to take ownership of community problems. The approach urges officials to partner with citizen groups and nonprofit organizations to identify solutions and deliver public services effectively.

However, a major obstacle to the reinventing government reform is the burden of transaction costs imposed on public officials and citizens. Government officials may find citizen engagement time consuming and costly. Given the time pressure they already face in the daily operation of government, networking with citizens and proactively soliciting public input seem an unnecessary and unwanted burden. Citizens also may be reluctant to participate in the decision-making process of the government. Attending meetings, writing formal feedback, and responding to surveys about public services may require a time commitment that many citizens are not willing to give regularly. As Schachter (1995) suggests, "more fundamentally, many individuals do not understand why they might want to take the trouble to seek [out] information [about government performance].... If we envision citizens as owners, then it is a problem that the proprietors lack the psychological and informational resources to mind their own business" (535–36).

## The Role of the Internet in Reinventing Government

It is in addressing these challenges that information technology has played an increasingly important role in public administration (Gore 1993; Bellamy and Taylor 1998; Heeks 1999). Before the Internet emerged in the late 1980s, the government was already actively pursuing information technology to improve operating efficiency and to enhance internal communication (Kraemer and King 1977; King 1982; Fletcher et al. 1992; Norris and Kraemer 1996; Brown 1999). However, the focus of e-government in this era was primarily internal and managerial.

The arrival of the Internet and the World Wide Web marked a watershed in information technology usage by shifting the focus of governance to its external relationship with citizens (Scavo and Shi 1999; Seneviratne 1999). Technology certainly played an important role in fostering the change. From the newsgroup and commercial email technology started in the mid-1980s, to the development of the World Wide Web and Web browser technology in the early 1990s (Zakon 2000), the Internet gradually has matured into a cost-effective and user-friendly platform for officials to communicate directly with citizens and to deliver massive quantities of information to the public.

The rise of e-commerce in the private sector further reinforced the shift in the focus of government. The Internet allows not only companies but also individual citizens to exchange information and conduct business transactions cost-efficiently. The flexibility of the Internet in providing access to goods, services, and information raises citizens' expectations of customer service in a range of contexts, including interactions with government. Many now expect

to find what they need to know about the government on the Web around the clock, seven days a week.

As a result of technological advancement and economic changes, policy makers have had further incentive to shift the focus of information technology usage from internal managerial needs to external linkages with the public. The National Performance Review report (Gore 1993) suggests that e-government “will allow citizens broader and more timely access to information and services through efficient, customer-responsive processes—thereby creating a fundamental revision in the relationship between the federal government and everyone served by it.” These remarks clearly reflect a new way of thinking about public service delivery.

### The Reemergence of “One-Stop Service Centers”

The philosophical change outlined above rejuvenated the idea of “one-stop service centers.” To be sure, the idea of “client-based” organization is not new. In the 1970s and 1980s, agencies involved in social services already were experimenting with this alternative organization model as a way of integrating government services and operations (Calista 1986; Rainey and Rainey 1986). However, such efforts often faced bureaucratic resistance and slack resource constraints (Rainey 1990). As a result, bureaucratic systems based on functional operations persisted in many public services.

In the Internet age, the idea of “one-stop shopping” has resurfaced as an alternative to functional departmentalization. As Reschenthaler and Thompson (1996) suggest, computers erode economies of scale in hierarchical organization and offer new justification for the establishment of responsibility centers—an arrangement similar to the one-stop service center. The state of Washington (1996), in its strategic information technology plan notes, “In the private sector, customers expect *one-stop shopping*—the ability to obtain diverse services in a timely, convenient and user-friendly manner from a single source.... Increasingly,

this same kind of one-stop service is demanded by citizens seeking government services and information” (7).

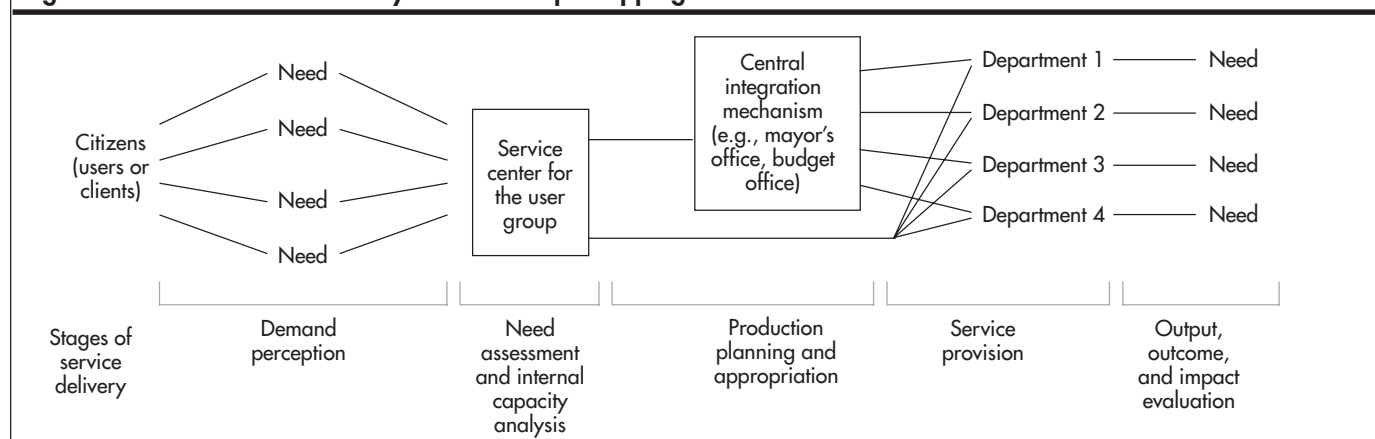
A one-stop service center is an umbrella organization that operates on top of existing functional departments and is intended to maximize the convenience and satisfaction of users through service integration. As the gateway for specific client groups such as businesses, residents, or visitors, the center collects information about user demand for inquiries and service assistance and processes the information centrally. It then coordinates with functional departments such as local police, city planning, and transportation to deliver public services and carry out wholistic planning (see figure 1).

Unlike early “client-based” reforms in social services during the 1980s, the creation of one-stop service centers today does not require a massive reorganization and consolidation of personnel. With the help of information technology, such as local area networks and project management software, public managers at the service center easily can coordinate with functional departments to conduct central planning and provide integrated services. By avoiding massive reorganization, the reform is less likely to encounter bureaucratic resistance in implementation.

The emergence of the World Wide Web further facilitates the growth of a one-stop service center model because a government Web site can itself serve as a convenient and cost-effective platform for centralized service provision. Businesses, residents, visitors, and intergovernmental liaisons easily can access public information and services related to their specific needs simply by clicking on different Web links in the city Web site. They can also contact government officials directly through email or online request forms to give feedback about specific issues.

As a result, information technology and the Internet are transforming public administration in the digital era (see table 1). In the traditional bureaucratic paradigm, public managers focus on internal productive efficiency, functional rationality and departmentalization, hierarchi-

**Figure 1 Public Service Delivery as “One-Stop Shopping”**



cal control, and rule-based management (Kaufman 1977; Bozeman 2000). In contrast, under the e-government paradigm—like the paradigm of information-technology-based organizations in the business world (Applegate 1994; Wigand, Picot, and Reichwald 1997)—public managers shift from emphasizing producer concerns, such as cost-efficiency, to focusing on user satisfaction and control, flexibility in service delivery, and network management with internal and external parties. The new paradigm stresses innovation, organizational learning, and entrepreneurship so that government can continue to reinvent itself. In addition, public service is no longer standardized in the new model. With the help of information technology, e-government can customize services based on personal preferences and needs.

The new paradigm transforms organizational principles in government. While the bureaucratic model emphasizes top-down management and hierarchical communication, the new model emphasizes teamwork, multidirectional network, direct communication between parties, and a fast feedback loop (Reschenthaler and Thompson 1996; Rosell 1999, 13–15). Citizens no longer need to know which departments are responsible for what in the “network” production of services. The functional departmental structure and production process of public services behind the operation of the “one-stop service center” becomes “invisible” to users. This is not to suggest that central leadership is unimportant in e-government. However, leadership in the new paradigm encourages facilitation and coordination among parties, rather than hierarchical command and control.

## Paradigm Shift Reflected in City Web Sites

The orientations of city Web sites provide evidence that this paradigm shift is indeed taking place in city governments. If a city adopts the traditional bureaucratic paradigm, its Web site organization tends to be administratively oriented. Information is organized primarily according to the administrative structure of the government and does not reflect substantial rethinking of the bureaucratic process and organization in public service delivery. City governments commonly adopted this approach when they began to form their first Internet presence in the 1990s.

Cities that have shifted from the bureaucratic paradigm to the e-government paradigm design their Web sites differently. They tend to use two common approaches, commonly referred to as “portal designs.” The first one is the “information-oriented” design, and the second is the “user-oriented” design. Both require a breakdown of departmental thinking and a reorganization of information according to the users’ perspective and interest.

The information-oriented approach applies the concept of “one-stop shopping service” by offering a tremendous amount of content on the home page, such as the city budget, demographics, calendar of local activities, major tourist attractions, official contacts, press releases, and employment opportunities. This approach emphasizes directness and extensiveness in information presentation, and gives users the greatest discretion in browsing without pre-categorizing the materials by departments or user groups.

The user-oriented portal design goes one step further by categorizing information and services on the Web according to the needs of different user groups. For example, a Web page for resident users may have information about community events and development, employment opportunities, local taxation, public services availability, and city departmental contacts. A separate business Web page may have information about local economic structure, major employers, amenities, business taxation, development incentives, and licensing, while a visitor Web page may provide information about city history, attractive tourist sites, and local festivals and cultural events. By integrating commonly used information on the same Web location, the user-oriented design gives users convenient and efficient access to needed information and services. Even though the information on the Web site comes from different departments or external sources, such as community organizations or business groups, users are unaware of the organizational boundaries of the providers in the cyberworld.

**Table 1 Shifting Paradigms in Public Service Delivery**

	<b>Bureaucratic paradigm</b>	<b>E-government paradigm</b>
Orientation	Production cost-efficiency	User satisfaction and control, flexibility
Process organization	Functional rationality, departmentalization, vertical hierarchy of control	Horizontal hierarchy, network organization, information sharing
Management principle	Management by rule and mandate	Flexible management, interdepartmental teamwork with central coordination
Leadership style	Command and control	Facilitation and coordination, innovative entrepreneurship
Internal communication	Top-down, hierarchical	Multidirectional network with central coordination, direct communication
External communication	Centralized, formal, limited channels	Formal and informal, direct and fast feedback, multiple channels
Mode of service delivery	Documentary mode, and interpersonal interaction	Electronic exchange, non face-to-face interaction (so far)
Principles of service delivery	Standardization, impartiality, equity	User customization, personalization



An analysis of the Web sites of the 55 most populous cities, conducted in the summer of 2000, shows that many city governments already have shifted their thinking from the traditional bureaucratic paradigm to the e-government paradigm. At that time, only a few cities, such as New Orleans, Columbus, and Miami, still were adopting an administrative orientation in their Web sites. Several cities, such as Fort Worth, Minneapolis, and St. Louis, adopted an informational orientation. The majority, however, had different degrees of user focus. Baltimore, Cleveland, Philadelphia, Seattle, and Washington, DC, had strong user orientation in their Web design. Other cities, such as Chicago, Denver, and New York, had a good balance between the user and informational orientations.

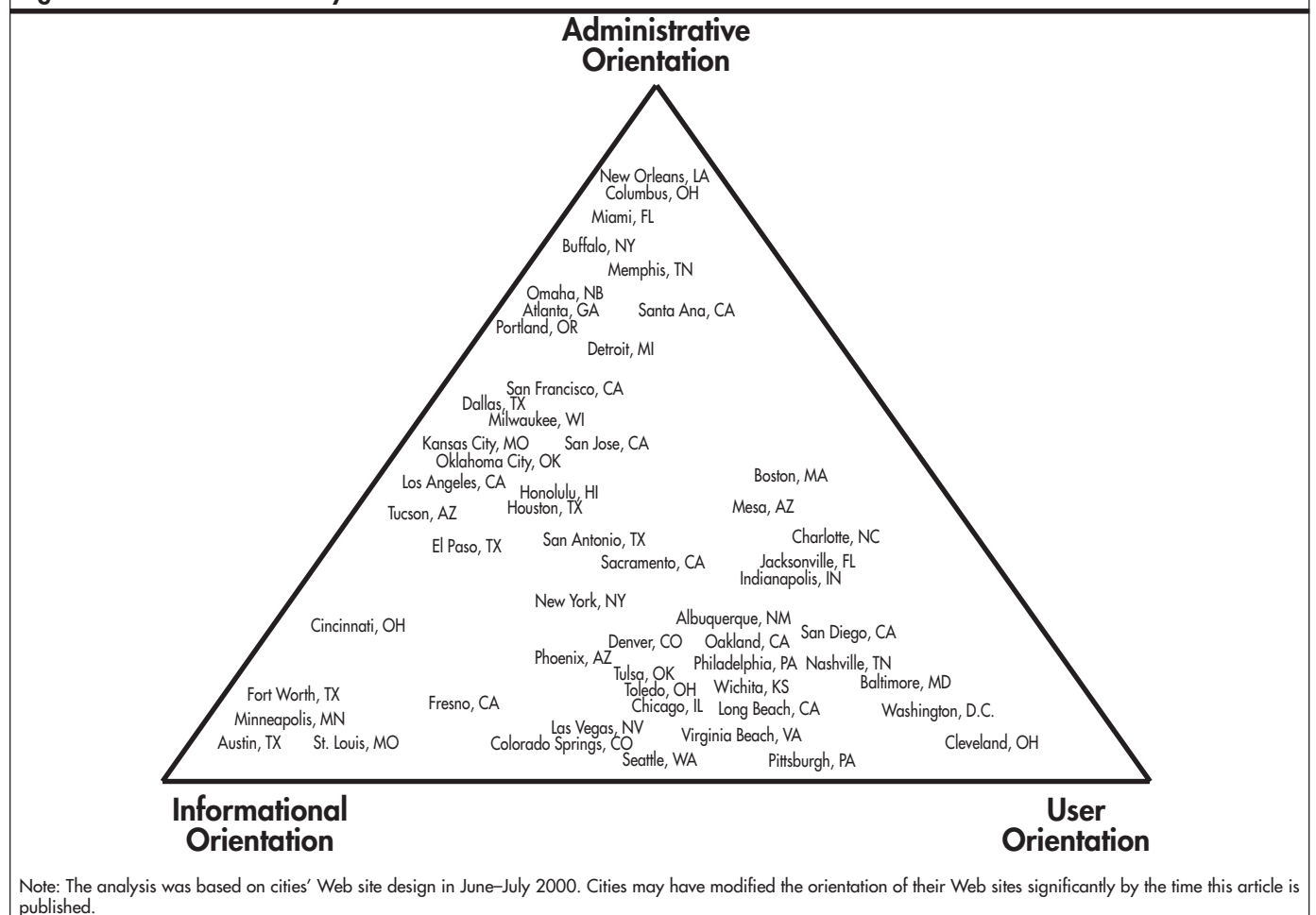
In addition to changes in Web design orientation, this shift toward the e-government paradigm was also reflected in the communication channels between citizens and officials available on city Web sites. Only a few cities still required users to navigate to individual departmental Web pages to get contact information about specific public services. Many cities had already abandoned departmental boundaries altogether and adopted the one-stop shopping approach by centralizing communication. Some cities, such

as Omaha and Las Vegas, encouraged citizens to communicate through the Web masters. Other cities, such as Boston, Charlotte, Colorado Springs, Indianapolis, New York, Oklahoma City, and Tulsa, used a centrally managed online service request system. Charlotte has one of the most comprehensive online request systems: Its Web site offers many options for online services, including getting permit application forms, contacting elected officials and policy making bodies, complaining about community and environmental problems, reporting crimes and traffic regulation violations, submitting resumes for city job applications, requesting various types of safety inspections, and getting payment forms for utility services. This mechanism breaks down the departmental mentality and allows citizens to communicate easily and effectively with different officials through a "one-stop center."

## Paradigm Shift Reflected in an Opinion Survey of Web Masters

The shift away from the traditional bureaucratic paradigm is further reflected in responses to a survey of city Web masters in the summer of 2000. Between April and June 2000, a

**Figure 2 Orientations of City Web Sites**



survey was sent to the city Web masters or officials responsible for Web development for the 55 most populous cities in the United States. The survey asked officials about the characteristics of the Web development process and why a city was interested in using Web-based services.<sup>2</sup>

The results show that many city officials have abandoned a departmental mentality in Web management. Among the 46 cities that responded to the survey, 31 (67 percent) had formal interdepartmental committees consisting of informational technology staff and user departments to take charge of Web development. Interdepartmental collaboration was especially valued by Web management officials in cities with an administratively oriented Web site (see table 2). This result might be surprising but understandable. Because these officials had to build city Web sites following the traditional departmental structure, they were highly dependent on departmental input to supply the necessary information and departmental focus. Without interdepartmental collaboration, their jobs would be extremely difficult.

Table 2 shows that many cities were open to external input and collaboration and put less emphasis on technocracy in Web development. This trend was especially evident in cities that adopted the nonadministrative Web designs. Although the differences were not statistically significant, these cities were slightly more open to external cooperation and networking, in that they emphasized the importance of citizen inputs and collaboration with nongovernmental organizations. Officials in these cities were also more user-oriented and believed more strongly that the Web is a tool to enhance customer service for citizens. In addition, they tended to deviate more from the traditional thinking of technocrats, as they were more likely to disagree that information technology management is purely a technical job.

## Why Did Cities Adopt the Paradigm Shift?

An inevitable question is, why were some of these cities more progressive in adopting the paradigm shift? Theories of organizational change and innovativeness suggest several hypotheses. Several studies have found that larger cities tend to be more innovative, possibly because they face a more diverse environment that always demands innovative solutions, or because they have more organizational freedom to try new ideas (Mytinger 1968; Smith and Taebel 1985; Damanpour 1992). Time and experience may be another factor. Cities may have a learning curve in Web development and need time to move gradually from the traditional bureaucratic paradigm to the e-government paradigm. In addition, the support of senior officials may play a critical role in spearheading technological change in an organization (Mechling and Fletcher 1996; Taylor et al. 1996). Their support for Web-based services may not only enhance the organizational awareness of the new paradigm of service delivery, but also provide the necessary resources to facilitate organizational changes.

The digital divide literature has found that different socioeconomic backgrounds influence the extent to which citizens use the Internet and computers (NTIA 1999; Neu, Anderson, and Bikson 1999; Riedel et al. 1998; Wilhelm 2000). Households with higher incomes are more likely to use computers and the Internet, while poorer, often minority households are less likely to tie to the digital world. Based on these findings, it is hypothesized that cities with larger minority populations and a lower per capita income are less likely to adopt progressive Web design because there may be insignificant citizen demand for Web-based services.

The following analysis examines how these factors are

associated with cities with different approaches to Web design. Table 3 shows the three groups of cities did not differ significantly in population, per capita income, and the ratio of elderly population. However, cities with an administrative-oriented Web site tended to have a higher ratio of minority population. This result is consistent with the digital divide literature and suggests that racial differences not only influence private usage of computers and the Internet, they may also affect the progressiveness of city governments in Web development.

The results also lend support to the learning-curve hypothesis. Cities with

**Table 2 Web Management Characteristics of Cities, by Orientations of Web Site Design**

Responses to the following statements are measured on a five-point scale; 5 is "strongly agree," 4 is "strongly disagree," 3 is "neutral," 2 is "disagree," and 1 is "strongly disagree." Standard deviations are in parentheses.	Administrative approach (n=13)	Informational approach (n=20)	User approach (n=18)
"Interdepartmental cooperation is important in the process of Web design and management."	4.64 (0.50)	4.55 (0.94)	4.33 (1.14)
"Information technology management is a technical job."	3.50 (0.85)	3.15 (1.31)	2.94 (1.14)
"The city administration regards the city Web site as a tool to improve customer service for citizens."	3.92 (0.76)	4.20 (1.06)	4.22 (1.17)
"Citizen feedback is important to the design of the city Web site."	3.64 (1.15)	4.10 (0.72)	4.11 (0.68)
"The collaboration with citizen, business, or community organizations is very critical to the design and maintenance of the city Web site."	3.21 (0.97)	3.40 (1.14)	3.78 (1.11)

Note: Six cities, namely, Chicago, Denver, Sacramento, Seattle, Toledo, and Tulsa, are in both "informational" and "user-oriented" categories because their Web site designs are equally balanced between the "information" and "user" orientations.

**Table 3 Background Characteristics of Cities, by Web Site Orientation**

	Administrative approach (n=14)	Nonadministrative Informational approach (n=24)	User approach (n=23)
Average population size	583,857 (246,824)	1,054,250 (1,570,774)	642,304 (530,399)
Average percentage of white population	74.9** (10.9)	82.1 (12.8)	81.0 (7.8)
Average percentage of population older than 65 years old	11.3 (2.3)	10.9 (1.8)	11.7 (1.9)
Average per capita income	\$23,629 (3,757)	\$21,855 (3,444)	\$23,105 (2,556)
Average years of having a city Web site (counting from the beginning to 2001)	4.5** (1.7)	5.4 (1.1)	5.9 (2.7)

Note: Standard deviations are in parentheses.

\*\*Indicates statistical significance at the 5 percent level.

an administrative focus in Web design, on average, only hosted an official Web site for 4.5 years, compared to 5.4 years among cities that used the informational approach, and almost 6 years among cities that used the user approach. As a city gains more experience in Web development, it is more likely to adopt a sophisticated design that reflects the new e-government paradigm.

Table 4 compares several internal organizational factors of cities. Although cities that adopted nonadministrative approaches tended to receive more support for Web development from elected officials than cities that adopted the administrative approach, the difference was not statistically significant. However, departmental support was correlated with the progressiveness of Web development. Cities that adopted the administrative focus perceived less

support from departmental staff. Insufficient departmental collaboration might be a motivating factor that explains why cities pursue a transformation from the traditional bureaucratic model to the e-government paradigm, which emphasizes the customer-driven mentality and interorganizational collaboration and coordination.

Resource constraints were another factor that may have prevented some cities from making progressive changes in Web design. The survey results showed that cities adopting the administrative approach perceived more serious constraints in staffing and funding priorities for Web development and maintenance, compared to cities with a nonadministrative focus in Web design. The difference was more significant when compared to cities that adopted the informational approach. This lack of funding and staff was specifically related to Web development and maintenance, because cities in all three groups had shown moderate support for general information technology development in the past five years.

The survey also asked the extent to which the rise of e-commerce in the private sector had put pressure on cities to develop Web-based services. The results show that cities with a nonadministrative design perceived more pressure in this area than cities with an administrative approach. This was especially true among cities that used the user approach. However, this difference among the three groups of cities was not statistically significant.

## Conclusion

The new e-government paradigm, which emphasizes coordinated network building, external collaboration, and

one-stop customer services, contradicts the traditional bureaucratic paradigm, which emphasizes standardization, departmentalization, and division of labor. Based on a content analysis of city Web sites and a survey of Web development officials, this article shows that many cities have started to move toward the new paradigm in their Web-based services and information technology management.

However, socioeconomic and organizational barriers to the transformation remain. Insufficient staff, lack of funding, and the problem of digital divide among racial groups are major hindering factors. Future efforts to reinvent government through Internet usage need to go beyond purely technical concerns in shaping information technology management (Dawes et al.

**Table 4 Internal Organizational Characteristics of Cities, by Orientations of Web Design**

Responses to the following statements are measured on a five-point scale; 5 is "strongly agree," 4 is "strongly disagree," 3 is "neutral," 2 is "disagree," and 1 is "strongly disagree." Standard deviations are in parentheses.	Administrative approach (n=13)	Nonadministrative Informational approach (n=20)	User approach (n=18)
"Elected officials (city council members and the city mayor) have been supportive of using the Web to deliver public information and services."	3.46 (1.20)	4.00 (1.38)	3.94 (1.21)
"Non-IT departmental staff have been supportive of using the Web to deliver public information and services."	3.38** (0.96)	4.10 (0.91)	3.89 (0.90)
"Web development in my city is sufficiently staffed."	1.62** (0.87)	2.65 (1.27)	2.06 (1.11)
"Web development and maintenance has high funding priority in my city."	2.08** (0.86)	3.00 (1.20)	2.72 (1.49)
"For the past five years, the city has always been supportive of information technology development."	3.46 (0.88)	3.60 (1.31)	3.06 (1.43)
"The city is under pressure to use the Web to deliver public information and services because of the rise of e-commerce in the private sector."	3.54 (1.27)	3.95 (1.00)	4.06 (1.11)

Note: Standard deviations are in parentheses.

\*\* Indicates statistical significance at the 5 percent level.

1999). Rather, information technology management 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.

Finally, some envision that Internet technology will enhance local democracy by allowing for more direct citizen input in policy making, expanding the scope of policy deliberation, and reducing intermediate barriers to information dissemination (Raab et al. 1996; Korac-Kakabadse and Korac-Kakabadse 1999; Moore 1999). Reflecting this perspective, Robert O'Neill, Jr., president of the National Academy of Public Administration, recently remarked, "The new technologies will allow the citizen new access to the levers of power in government. As more information reaches the citizen, the greater the potential for them to influence and make informed choices regarding how government touches their lives. That potential gives new meaning to a 'government of the people, by the people and for the people'" (O'Neill 2001, 6).

Unfortunately, the Web site analysis in this article shows that many city governments have not yet actualized this potential. So far, Internet initiatives have focused primarily on customer services. Although many cities actively seek citizen input on how they should design city Web sites (Cook 2000), only a few cities engage citizens in online policy dialogues or partner with community organizations to strengthen citizen participation at the neighborhood level.<sup>3</sup> Some basic features of public accountability and citizen empowerment, such as performance measures of public services, online discussion groups, or information about grassroots organization activities, are seldom found in city Web sites. Hence, the question of how to move beyond the focus on customer service is another challenge for cities' effort to reinvent government through information technology. Officials should be conscious of the danger of focusing too much on the economic elites' interests and convenience (Moore 1999). Instead, a broad partnership with different social interests and community organizations is necessary to reorient Internet initiatives toward citizen empowerment.

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## Notes

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1. Although this model has been criticized for neglecting the citizenry (Frederickson 1994; Cox 1995; Schachter 1995), it is a powerful conceptualization of how to break the internal bureaucratic focus in government.
2. To ensure the survey reached the correct person, the researcher first made phone contacts with the cities and talked to the Web masters or city officials responsible for Web site development to make them aware of the survey. Then the survey was sent by fax or electronically to these officials' email addresses. In the summer of 2000, nonrespondents were contacted by phone and asked to do the survey over the phone. The survey instrument can be made available to readers upon request.
3. For example, to further enhance direct two-way communication between officials and citizens, the city of Las Vegas offers a real-time online chat service. The city Web sites of Boston and St. Louis provide tremendous information about neighborhood events, grassroots activities, and community organizations for interested citizens.



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## Appendix Cities Surveyed in the Study

City	Population, 1996	Official Web sites	Year of first Web site	Department responsible
New York	7,381,000	<a href="http://www.ci.nyc.ny.us/">http://www.ci.nyc.ny.us/</a>	1996	NYC.GOV
Los Angeles	3,554,000	<a href="http://www.ci.la.ca.us/">http://www.ci.la.ca.us/</a>	1994	Information Technology Agency
Chicago	2,722,000	<a href="http://www.ci.chi.il.us/">http://www.ci.chi.il.us/</a>	1995	Business and Information Services
Houston	1,744,000	<a href="http://www.ci.houston.tx.us/">http://www.ci.houston.tx.us/</a>	1996	Department of Finance and Administration
Philadelphia	1,478,000	<a href="http://www.phila.gov/">http://www.phila.gov/</a>	1995	Mayor's Office of Information Services
San Diego	1,171,000	<a href="http://www.sannet.gov/">http://www.sannet.gov/</a>	1994	Department of Information Technology and Communications
Phoenix	1,159,000	<a href="http://www.ci.phoenix.az.us/">http://www.ci.phoenix.az.us/</a>	1995	Department of Information Technology
San Antonio	1,068,000	<a href="http://www.ci.sat.tx.us/">http://www.ci.sat.tx.us/</a>	1995	Decentralized to individual departments
Dallas	1,053,000	<a href="http://www.ci.dallas.tx.us/">http://www.ci.dallas.tx.us/</a>	1996	Communications and Information Services
Detroit	1,000,000	<a href="http://www.ci.detroit.mi.us/">http://www.ci.detroit.mi.us/</a>	1998	Department of Communications and Creative Services
San Jose	839,000	<a href="http://www.ci.san-jose.ca.us/">http://www.ci.san-jose.ca.us/</a>	a	Department of Information Technology
Indianapolis	747,000	<a href="http://www.indygov.org/">http://www.indygov.org/</a>	1996	Information Service Agency, CIO Department
San Francisco	735,000	<a href="http://www.ci.sf.ca.us/">http://www.ci.sf.ca.us/</a>	1995	Department of Telecommunications and IT Services
Jacksonville, FL	680,000	<a href="http://www.ci.jax.fl.us/">http://www.ci.jax.fl.us/</a>	1995	Department of Public Information and IT
Baltimore	675,000	<a href="http://www.ci.baltimore.md.us/">http://www.ci.baltimore.md.us/</a>	a	Bureau of Information Technology and Services
Columbus	657,000	<a href="http://www.ci.columbus.oh.us/">http://www.ci.columbus.oh.us/</a>	1993	Decentralized to individual departments and Department of Technology
El Paso	600,000	<a href="http://www.ci.el-paso.tx.us/">http://www.ci.el-paso.tx.us/</a>	1997	Department of Public Works/Information Services
Memphis	597,000	<a href="http://www.ci.memphis.tn.us/">http://www.ci.memphis.tn.us/</a>	1999	Information Service Agency
Milwaukee	591,000	<a href="http://www.ci.mil.wi.us/">http://www.ci.mil.wi.us/</a>	1996	Department of Public Relations and Communications
Boston	558,000	<a href="http://www.ci.boston.ma.us/">http://www.ci.boston.ma.us/</a>	1996	Mayor's Office
Washington, DC	543,000	<a href="http://www.washingtondc.gov/">http://www.washingtondc.gov/</a>	a	Office of Chief Technology
Austin	541,000	<a href="http://www.ci.austin.tx.us/">http://www.ci.austin.tx.us/</a>	1995	Public Information Office
Seattle	525,000	<a href="http://www.ci.seattle.wa.us/">http://www.ci.seattle.wa.us/</a>	a	Information Technology Office
Nashville-Davidson	511,000	<a href="http://janis.nashville.org/">http://janis.nashville.org/</a>	1986	Department of Information Systems
Cleveland	498,000	<a href="http://www.cleveland.oh.us/">http://www.cleveland.oh.us/</a>	1999	Community and Cultural Liaison
Denver	498,000	<a href="http://www.denvergov.org/">http://www.denvergov.org/</a>	1995	Office of Television and Internet Services
Portland	481,000	<a href="http://www.ci.portland.or.us/">http://www.ci.portland.or.us/</a>	1995	Bureau of Information Technology
Fort Worth	480,000	<a href="http://www.ci.fort-worth.tx.us/">http://www.ci.fort-worth.tx.us/</a>	a	Information Technology Solution Department
New Orleans	477,000	<a href="http://www.new-orleans.la.us/">http://www.new-orleans.la.us/</a>	1998	Chief Administrative Office, MIS Division and Mayor's Office of Communications
Oklahoma City	470,000	<a href="http://www.okc-cityhall.org/">http://www.okc-cityhall.org/</a>	1995	Bureau of Business and Community Technology
Tucson	449,000	<a href="http://www.ci.tucson.az.us/">http://www.ci.tucson.az.us/</a>	1997	Department of Information Technology
Charlotte	441,000	<a href="http://www.charmeck.nc.us/">http://www.charmeck.nc.us/</a>	1996	Corporate Communications Unit
Kansas City	441,000	<a href="http://www.kcmo.org/">http://www.kcmo.org/</a>	1996	Department of Information Technology
Virginia Beach	430,000	<a href="http://www.virginia-beach.va.us/">http://www.virginia-beach.va.us/</a>	1996	Department of Information Technology
Honolulu	423,000	<a href="http://www.co.honolulu.hi.us/">http://www.co.honolulu.hi.us/</a>	1994	Department of Information Technology
Long Beach	422,000	<a href="http://www.ci.long-beach.ca.us/">http://www.ci.long-beach.ca.us/</a>	a	Department of Technology Services
Albuquerque	420,000	<a href="http://www.cabq.gov/">http://www.cabq.gov/</a>	1994	Currently no centralized position or department
Atlanta	402,000	<a href="http://www.ci.atlanta.ga.us/">http://www.ci.atlanta.ga.us/</a>	1996	Department of Administrative Services
Fresno	396,000	<a href="http://www.fresno.gov/">http://www.fresno.gov/</a>	1998	Department of Information Technology Services
Tulsa	378,000	<a href="http://www.cityoftulsa.org/">http://www.cityoftulsa.org/</a>	1995	Department of Telecommunications
Las Vegas	377,000	<a href="http://www.ci.las-vegas.nv.us/">http://www.ci.las-vegas.nv.us/</a>	1996	Department of Information Technology
Sacramento	376,000	<a href="http://www.ci.sacramento.ca.us/">http://www.ci.sacramento.ca.us/</a>	a	Department of Telecommunications, Technology Division
Oakland	367,000	<a href="http://www.oaklandnet.com/">http://www.oaklandnet.com/</a>	a	Office of Information Technology
Miami	365,000	<a href="http://www.ci.miami.fl.us/">http://www.ci.miami.fl.us/</a>	1997	Department of Information Technology
Omaha	364,000	<a href="http://www.ci.omaha.ne.us/">http://www.ci.omaha.ne.us/</a>	1996	Department of Administrative Services/MIS
Minneapolis	359,000	<a href="http://www.ci.minneapolis.mn.us/">http://www.ci.minneapolis.mn.us/</a>	1995	Department of Information and Technology (1995-98 Public Affairs)
St. Louis	352,000	<a href="http://stlouis.missouri.org/">http://stlouis.missouri.org/</a>	1995	The Economic Development Branch and the Research and Planning Agency
Pittsburgh	350,000	<a href="http://www.city.pittsburgh.pa.us/">http://www.city.pittsburgh.pa.us/</a>	1998	Department of City Information Systems
Cincinnati	346,000	<a href="http://www.ci.cincinnati.oh.us/">http://www.ci.cincinnati.oh.us/</a>	a	Department of Regional Computer Center
Colorado Springs	345,000	<a href="http://www.colorado-springs.com/">http://www.colorado-springs.com/</a>	1996	Information Technology Unit
Mesa	345,000	<a href="http://www.ci.mesa.az.us/">http://www.ci.mesa.az.us/</a>	1995	Department of Information Service
Wichita	320,000	<a href="http://www.ci.wichita.ks.us/">http://www.ci.wichita.ks.us/</a>	1995	Department of Finance
Toledo	318,000	<a href="http://www.ci.toledo.oh.us/">http://www.ci.toledo.oh.us/</a>	1997	Department of Finance-Division of Computing/Information Services
Buffalo	311,000	<a href="http://www.ci.buffalo.ny.us/city/">http://www.ci.buffalo.ny.us/city/</a>	1998	Department of Management Information Systems
Santa Ana	302,000	<a href="http://www.ci.santa-ana.ca.us/">http://www.ci.santa-ana.ca.us/</a>	1998	City Manager's Office

a. Cities that did not respond to the survey or did not know when they hosted their first Web site for public access.