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STRATEGIC INFORMATION SYSTEMS PLANNING IN U.S. COUNTY GOVERNMENTS: Will the Real SISP Model Please Stand Up?

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Will the Real SISP Model Please Stand Up?

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ABSTRACT: *This paper is the second in a series of studies examining strategic information systems planning (SISP) in U.S. governments based on information technology performance data and ratings generated for the Government Performance Project (2000 re states and 2001 re counties). The first study examined SISP at the* state *level (*PPMR*, June 2002). This study investigates SISP in* county *government using data from the 40 largest U.S. counties in terms of revenue within regions. Findings suggest that structural features of county government inhibit translation to counties of successful business models for strategic use of information systems, and they support the conclusion that models need to be adapted to meet the challenges of government planning. Examples of successful planning in some counties where the county CIO or the central county information technology office plan strategically within the limits of their authority may point a way toward a model for government. Further study is needed to develop a reliable U.S. government model for SISP.*

KEYWORDS: *county government; county information systems planning; information technology planning; SISP; strategic information systems planning; strategic information systems planning models*

This paper is the second in a series of studies examining strategic information systems planning (SISP) in U.S. governments based on data gathered for the Government Performance Project (GPP) during the years 1996 through 2002.

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Studies in this series are based on analysis of the raw data (questionnaires) supplied by the Maxwell School of Citizenship and Public Affairs at Syracuse University. The research reported here investigates strategic information systems planning in *county* government using data from the largest U.S. counties.[1]

The first study in the series examined SISP at the *state* level.[2] The results of the first study indicate that information systems planning by state governments typically is not strategic, and that state government differs from the private sector in ways that impede implementation of strategic information systems planning.[3] The data show that top-level state government decision-makers are political and tend not to be involved in SISP. Instead, career managers of individual state agencies plan within the boundaries of their agencies at tactical levels of the state enterprise.

As well as a wealth of survey data for use by the research community, the GPP generated a seminal, pre-theoretical model (Figure 1) for describing and evaluating government performance. The GPP model identifies the four components or subsystems of management capacity essential for government performance: financial, human resources, capital, and information technology. The model guided collection of GPP data and the development of GPP criteria for evaluating state, county, and city government performance.[4] Each of the four management subsystems is necessary to government performance. Any government must manage and account for money, hire appropriately qualified people, plan for and manage large capital expenditures, and manage information. Government capacity for performance is further related to how well these subsystems work together. The GPP model embodies these concepts and includes three mechanisms for integrating the subsystems so that they work together: managing for results to frame information gathering and feedback about performance, leadership as the force animating integration, and information as the medium of connection. The integrative potential of information technology resides in getting timely and relevant information from each subsystem to managers as they make decisions that involve multiple subsystems (Ingraham, 2003).

The GPP Model of Government Performance

The GPP model and the GPP criteria of evaluation highlight the strategic significance of information technology to government performance. In doing so, they parallel premises widely accepted in the private sector, where the strategic planning process typically engages information technology and is expected to contribute to the bottom line by aligning information technology with organizational objectives (Boar, 2001; Ward & Griffiths, 1996).

On the basis of GPP data, this study explores the process of SISP at the county level of government. The introduction is followed by sections on why SISP in county government is expected to differ from SISP in state government; the

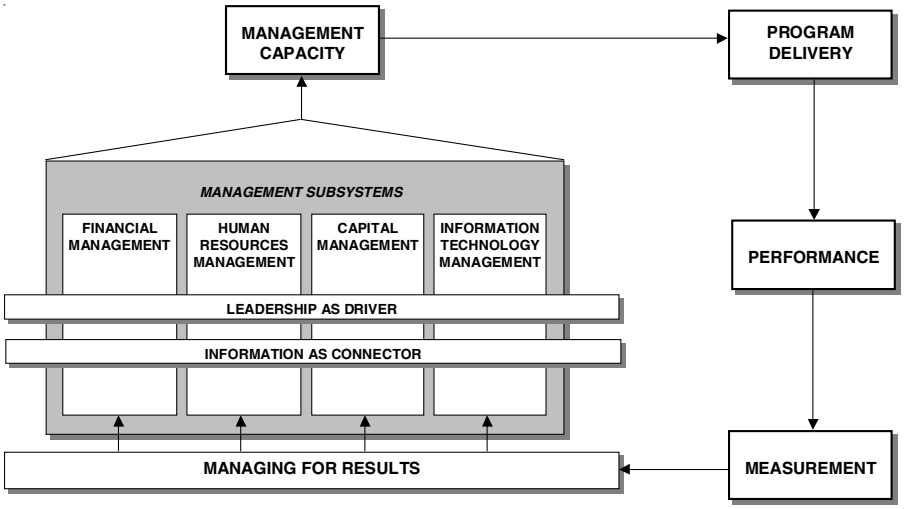

Figure 1. GPP Model

Source: Government Performance Project, Alan K. Campbell Public Affairs Institute, Maxwell School of Citizenship and Public Affairs, Syracuse University (www.maxwell.syr.edu/gpp/about/goals.asp).

research questions; the methodology; and results of the analysis of GPP questionnaire data. The analysis examines stakeholder involvement, the relationship of county SISP and the GPP evaluation ("grade") for information technology management; and the extent to which the information systems planning reported by the counties studied is SISP. The paper closes with a discussion of the limitations of the study and presents conclusions and suggestions for future research.

SISP and County Government

The political process embodied in elected officials is both internal and external to the institutions of governance. It is the means for all interested parties external to government institutions to influence the goals and objectives of government. There are two major approaches to defining that which is external to a public organization. One approach simply makes the distinction based on the legal type of the organization (government owned versus privately owned). The other approach views publicness as a function of the extent to which political authority influences organizational processes such as SISP (Bozeman & Bretschneider, 1994). Both approaches support the idea that public organizations are different from organizations that are not public.

In addition, the loosely coupled internal structures of U.S. government organi-

zations may not support the degree of formalization and integration of information systems structures, techniques, written procedures, and policies necessary for SISP within the enterprise (Lederer & Sethi, 1996; Sabherwal & King, 1995). Government objectives represent a political compromise among various, often conflicting, interests, many of which are *external* to the organization and are nonpublic. In U.S. government, elected officials select objectives that are expressed as laws, and unelected professional staff must implement the objectives.

The number and diversity of stakeholders and interests involved in the government planning process may not permit the degree of integration of objectives needed for SISP (Lederer & Sethi, 1998; Sabherwal & King, 1995). Stakeholders with roles in county government information systems planning include members of an elected governing board, council, or commission—a plural executive—and county employees, but also include technology vendors and other constituencies and interest groups as well as the citizens themselves (Dawes, Pardo, Connelly, Green, & McInerny, 1997). In public organizations, plans are likely to remain plans unless large numbers of internal and external stakeholders are part of the planning process and thus preempted from presenting obstacles to implementation later (Bryson, 1995; Bryson & Alston 1996; Newcomer & Caudle, 1991; Reed, 2003). On the other hand, inclusion of *external* stakeholders with conflicting interests can be expected to influence the coherence and timeliness of planning.

In the private sector, the strategic objectives of an organization are *internal* to the organization and directed toward shared goals and objectives (Boar, 2001; Ward & Griffiths, 1996). While there may be some consideration of external stakeholders such as vendors, it is to a much lesser degree than in government.

The time constraints inherent in government election and budget cycles also constitute a barrier to long-term planning. Strategic information systems planning requires a long time frame—five years is an accepted minimum planning horizon (Segars, Grover, & Teng, 1998). In U.S. county government, short election and budget cycles imply short planning horizons for elected and appointed officials (Coppa, 2000; Caudle, Gorr, & Newcomer, 1991). U.S. county government objectives are set by politically elected or appointed officials who focus typically on achieving visible results in two years or less.[5] Stephen Bajjaly's (1999) nationwide study of state officials indicates that the only long-term objectives communicated to information resource managers are focused on budgetary and operational efficiency. Budgetary and operational efficiency are tactical, not strategic, objectives. The impact of brief election and budget cycles (typically two years) on the duration of top-level commitment and, consequently, the long-term focus required for SISP is clear. A two-year window is insufficient for authentic strategic IS planning (Segars, Grover, & Teng, 1998). Even within a two-year time frame, policies and priorities of top elected and appointed officials often need to be renegotiated to accommodate requirements of external stakeholders.

The separation of setting objectives from planning and implementation, and the involvement of multiple interests in planning, characterizes federal, state, and county governments. County governments, however, may be the least advantaged level in relation to conditions needed for strategic planning in general, or for SISP.

County government is structured, and in various degrees directed, by state government. Counties often are the last to receive funding for implementation of strategic objectives mandated at the federal or state level to be implemented by counties (Coppa, 2000; Ciglar, 1998). The same governing structure limits county authority to raise revenue. The results of decision-making at the state and federal levels constitute constraints imposed on the counties. Examples of unfunded or underfunded requirements include homeland security preparedness (Bashir, Lafronza, Fraser, Brown, & Cope, 2003) and jails (Clark, 2003; Fletcher, 1997). Counties are typically responsible for airports, roads, bridges, and water and sewer systems. They also often serve as agents of the state for human service delivery programs. For unincorporated areas, counties provide municipal services such as sanitation, public safety, and fire protection (Coppa, 2000; Barrett, Greene, & Mariani, 2002; Ciglar, 1998).

County departments may receive funding directly from the state or federal government (Coppa, 2000), thus circumventing the top level of county government, which places an additional barrier in the path of setting countywide objectives. Further, lack of integration among departments of state government impedes integration of county information technology, as separate state departments require their county counterparts to use specialized data formats (Holley et al., 2002; Fletcher, 1997). Like state governments, the emergence of information technology capacity in most county governments has been ad hoc and uncoordinated. As a result, most county governments have functionally defined systems that are islands of information within agencies. These systems do not "talk" to one another, nor are they integrated with other systems in the same county or with the information systems at the state level (Fletcher, 1997).

County governments are exhorted to deliver organization performance facilitated by the level of information systems effectiveness associated with SISP (as exemplified by the GPP criteria in Appendix B). A comparison of conditions requisite to SISP with descriptions of the structures and strictures of county government suggests that SISP may not be possible in the typical county government, and it gives rise to the research questions addressed in this study.

Research Questions

This study is focused on strategic information systems and technology planning at the countywide level. It asks:

- In cases where counties report that SISP is carried out, does it differ from standards for SISP suggested by the literature?
- Is SISP carried out by U.S. county governments?

In the context of considering these questions, county information technology and systems planning—"strategic" and otherwise—is explored.

Methodology

The data analyzed for this study were collected in a 2001 survey for the Government Performance Project Year 2002 evaluation of U.S. county governments (Government Performance Project, 2002a, 2002b). The sample consists of the 40 largest counties selected based on revenue within regions. The Maxwell School of Citizenship and Public Affairs at Syracuse University selected the counties and conducted the data collection. The data consist of responses to a mailed questionnaire; follow-up interviews conducted over the telephone; review of published documents such as Web pages, budget overviews, state-of-the-state addresses, and other strategic statements; and performance ratings by expert judges. To grade county performance, the GPP criterion measures of success were applied to information gleaned from all sources (Ingraham, 2003).

The questionnaire was mailed to each of the 40 counties. Thirty-eight completed questionnaires were returned. A wealth of descriptive and quantitative data is available from the completed questionnaires. The analysis presented here is limited to response data from the mailed questionnaires, and the ratings assigned by experts.

The evaluative grades were assigned to each county by expert judges using GPP criterion measures of success.[6] Based on the criterion measures, each county was given separate grades for financial management, human resources management, information technology management, capital management, managing for results, and overall performance.

The GPP questionnaire contained a combination of open-ended and close-ended questions. The open-ended questions were similar to interview questions in that respondents were free to write detailed responses and include documentation, pictures, and supplemental materials as they wished. The closed-ended questions were designed to elicit a constrained response such as selection of an item by checking a box or ranking of the listed options on a Likert-like scale. Grades assigned to counties for information technology management performance ranged from A (high) to D (low), as shown in Table 3.

For this paper, we focused our analysis on the responses to items 12 and 13 from the GPP questionnaire (Appendix A). These questions were judged the most relevant for evaluating strategic planning activities. Together, the questions provided 100 variables (Appendix A). The 101st variable in the study is

the county grade for overall IT performance assigned by GPP judges (Table 3).

Data analysis consisted of coding the often rather complex responses and then conducting both a qualitative and quantitative analysis of the data and the information from the 38 returned questionnaires. Each questionnaire also was reviewed for qualitative data regarding SISP practices. Public information (county Web pages) also was reviewed to further clarify county governance structures.

Both SPSS and SAS were used to conduct the data analyses. SPSS was used to conduct the initial descriptive analysis, generating frequencies and modes for the data. SAS was used to calculate the Cronbach coefficient alphas (SAS 1988, 1999) to evaluate the level of internal consistency among the actors across the dimensions of relative involvement in the performance of key information technology management functions in the county.

Findings

Patterns of stakeholder involvement in SISP are presented and discussed in the following sections. The discussion is followed by a comparison of SISP and grades for information technology management in county governments.

PATTERNS OF STAKEHOLDER INVOLVEMENT

SISP is characterized by a pattern of high involvement by top management in the strategic key management functions and low involvement in the tactical key management functions in the private sector. The reverse of this pattern of involvement is expected for lower-level stakeholders (Segars, Grover, & Teng, 1998). We would expect to see the same patterns of involvement for their counterparts in the public sector, top elected officials, if the private-sector model for SISP can be applied to the public sector.

Using the GPP survey results, we sought to assess the relative level of involvement of stakeholders in each of the management functions relevant to the SISP process. The stakeholders or actors included are: the county board, council, or commission; legislative committee(s); the chief elected official; the chief administrative officer; executive committee(s); the chief information officer (CIO); the central IT office; the IT steering committee; individual county departments; IT end-users; external consultants; external vendors; and citizens. The key management functions relevant to SISP are shown in Table 1. Our objective was to learn whether stakeholder patterns of involvement in the planning process are consistent with the private-sector model of SISP.

For this survey the strategic management functions investigated are Making Policy About Design and Use of IT Systems, Developing IT Strategic Plans, and Approving the Procurement of IT Systems and Hardware. The tactical management functions investigated are Designing and Developing IT Systems and

Table 1. Modal Level of Involvement of Various Stakeholders in Key County Information Technology Management Functions (percent of responses at the mode)

Key IT management functions / *Stakeholders*	*Making policy about design and use of IT systems*	*Developing IT strategic plans*	*Designing and developing IT systems and projects*	*Approving the procurement of IT systems and hardware*	*Implementing IT systems, and projects*	*Overseeing the implementation of IT systems, and projects*
County board, council, or commission	1 (32.4%)	1 (43.2%)	1(81.1%)	5 (30.0%)	1 (83.8%)	1 (59.5%)
Legislative committee(s)	1 (48.3%)	1 (58.6%)	1 (82.8%)	1 (62.1%)	1 (89.7%)	1 (82.8%)
Chief elected official	2 and 3 (26.7%)	3 (36.7%)	1 (83.3%)	5 (36.7%)	1 (66.7%)	1 (56.7%)
Chief administrative officer	3 (29.7%)	2 (35.1%)	1 (54.1%)	3 (32.4%)	1 (64.9%)	2 (35.1%)
Executive committee(s)	3 (32.1%)	3 (35.7%)	1 (46.4%)	1 (35.7%)	1 (64.3%)	1 (42.9%)
Chief information officer (CIO)	5 (87.5%)	5 (90.6%)	5 (37.5%)	5 (75.0%)	3 and 5 (34.4%)	5 (65.6%)
Central county IT office	5 (59.9%)	5 (63.2%)	5 (76.3%)	5 (47.4%)	5 (73.7%)	5 (71.1%)
IT steering committee	5 (32.3%)	5 (32.3%)	3 (32.3%)	3 (29.0%)	3 (29.0%)	5 (29.0%)
Individual departments	3 (31.6%)	3 and 4 (26.3%)	5 (36.8%)	3 (36.8%)	5 (44.7%)	5 (36.8%)
IT end-users	1 (52.6%)	1 (44.7%)	3 (34.2%)	1 (65.8%)	3 (34.2%)	1 (42.1%)
External consultants	1 (55.3%)	3 (36.8%)	3 (55.3%)	1 (81.6%)	3 (39.5%)	(31.6%)1 and 3
External vendors	1 (86.8%)	1 (68.4%)	3 (36.8%)	1 (84.2%)	3 and 4 (29.0%)	1 (44.8%)
Citizens	1 (73.7%)	1 (65.8%)	1 (81.6)	1 (89.5%)	1 (94.7%)	1 (92.1%)

Note: The Modal Level of Involvement Scale ranges from 1 (not involved) to 5 (very involved).

Source: Primary source data from GPP IT questionnaires coded and analyzed by Holley, Dufner, and Reed.

Projects, Implementing IT Systems and Projects, and Overseeing the Implementation of IT Systems and Projects. The high-level stakeholders who decide organization objectives would be expected to be very involved in strategic management functions and relatively uninvolved in the tactical management functions.

County respondents rated level of involvement on a Likert-like scale from 1 (not involved) to 5 (very involved) for each key management function for each stakeholder. The data and the percentages in the mode shown in Table 1 suggest that the level of involvement for any particular actor might not vary as expected across the key management functions. At the elected-official level, where organizational objectives are set, the established model of SISP would predict more involvement in developing strategic plans than in designing systems or overseeing implementation of systems. Elected members of the county board, council, or commission and their legislative committees have modal participation ratings of "1," that is, they are "not involved" in any information systems or technology function except for approving procurement of systems and hardware.

Examination of stakeholder involvement in SISP using a Cronbach coefficient alpha (Miller, 1995) shows stakeholders tend to be either involved in all or most of the key management functions (both strategic and tactical) or not involved. For SISP, the pattern of involvement should show a difference between levels of involvement in strategic versus tactical key management functions.

The Cronbach coefficient alpha scores for the key management functions studied approached 0.8 or better (a conservative criterion), confirming that involvement in the six key management functions is not differentiated for most of the internal stakeholders. The six variables representing involvement in the key management functions could be collapsed into one variable that would express the level of involvement of: the county board, council, or commission; the legislative committee(s); the chief elected official; the executive committee; the CIO; the central IT office; the IT steering committee; individual departments; and IT end-users.

The chief administrative officer, the only exception for the internal stakeholders, has a Cronbach coefficient alpha score of 0.68, suggesting more differentiated levels of involvement in the key management functions. A closer look at the modal level of involvement (Table 1) shows that the levels of involvement may vary across key management functions, but levels of involvement in strategic functions are too low to be considered examples of SISP with modal scores for Making Policy About the Design and Use of IT systems, Developing IT Strategic Plans, and Designing and Developing IT Systems and Projects of 3, 2, and 3.

The external stakeholders studied (consultants, vendors, and citizens) show lower correlations among the key management functions with Cronbach coefficient alpha scores respectively of 0.66, 0.67, and 0.57. Again, looking at the

modal scores for the strategic key management functions (Table 1) reveals variability but at very low levels of involvement.

Levels of involvement at the mode inspected separately for each key management function for the chief administrative officer, external consultants, external vendors, and citizens coupled with the Cronbach coefficient Alpha scores indicate that none of the patterns of involvement expected for stakeholders in county information systems and technology planning approaches the levels expected for SISP.

On the other hand, the unelected staff members who are structurally separate from deciding the objectives of county government, staff in the CIO function and the central county IT office, have modal ratings of 5, "very involved," for every management function. Furthermore, the percentages of these unelected actors at the modes are relatively robust with most above 60% (Table 1). Without involvement in setting organization objectives, information systems and technology planning is restricted to a tactical rather than a strategic role, and SISP is not realized.

The pattern of IT steering committee involvement in key management functions was closer to the pattern expected of SISP. The modal involvement of the IT steering committees in two of the three strategic aspects of management was "5" or "Very involved" (i.e., Making Policy About Design and Use of Systems, 32.3%, and Designing Strategic Plans, 32.3%). At the same time, modal involvement of the IT steering committees in two of the three tactical aspects of management was relatively low with a modal involvement of 3 for both Designing and Developing Systems and Projects (32.3%), and Implementing Systems and Projects (29.0%). Although percentages at the mode were not robust and the pattern fell short of complete correspondence with the SISP model, the pattern of the involvement of IT steering committees comes closer to the SISP model than the pattern for any other county stakeholder rated.

The patterns of involvement in county management functions for stakeholders other than the IT steering committee were consistent with expectations based on structural models of government planning, but not with the model for SISP. The modal levels of involvement for individual departments were "very involved" (5) only for Designing and Developing IT Systems and Projects (36.8%), Implementing Systems and Projects (44.7%) and Overseeing the Implementation of Systems and Projects (36.8%)—a pattern reflecting involvement from a tactical perspective. Modal levels of involvement in management functions for other stakeholders were lower, at 3 or less. Other stakeholders are not engaged at the level of county government where county objectives are decided.

Stakeholders' patterns of involvement in SISP were further explored specifically for participation in the key management function of Developing the IT Strategic Plan. The percent rated "very involved," 5 or 4, and the percent rated "not involved," 1 or 2, are compared (Table 2). The CIO and central county IT

Table 2. Stakeholder Involvement in Developing IT Strategic Plans (percentages)

Actor/ Stakeholder (n = 38)	*% Very involved (rated 4 or 5)*	*% Not involved (rated 1 or 2)*
County board, council, or commission	16.2	72.9
Legislative committee	6.9	82.8
Chief elected official	13.3	50.0
Chief administrative officer	29.7	46.0
Executive committee(s)	28.5	35.7
CIO	96.9	0.0
Central county IT office	81.6	13.2
IT steering committee	51.6	25.8
Individual departments	50.0	23.7
IT end-users	7.8	72.1
External consultants	7.8	55.2
External vendors	2.6	94.7
Citizens	2.6	91.1

Note: See Appendix A, Questionnaire Item 12.

office are reported to have the greatest involvement, with percentages of 96.9% and 81.6% respectively.

Steering committees and individual departments have intermediate levels of involvement in Developing IT Strategic Plans with percentages of 51.6% and 50.0% respectively. The executive levels: the county board, council or commission; the legislative committee(s); the chief elected official; and the executive committee(s) have low levels of involvement in Developing IT Strategic Plans with percentages of 16.2%, 6.9%, 13.3%, and 28.5% respectively, while IT end-users, external consultants, external vendors, and citizens have the lowest levels of involvement, with percentages of 7.8%, 7.8%, 2.6%, and 2.6% respectively. The percentages indicate that information systems and technology planning in counties is a strong career-level function, relegated to IT specialists and probably confined to tactical levels of planning.

The disengagement of the county executives indicated by the percentages "not involved" (72.9% of the county board, council, or commissions; 82.8% of the legislative committees; and 50% of the chief elected officials) further suggests an operational rather than a policy bias for countywide information systems and technology planning (Table 2).

County board, council, or commissions, and the chief elected officials received ratings of 5, "very involved" for the key management function Approval of the Procurement of IT Systems and Hardware, which can be considered strategic. The modal score for involvement of these stakeholders in the other five management functions is 1, "not involved." These stakeholders are most interested in

Table 3. Grades for Information Technology Assigned by GPP Judges

Grade	*County*	*Grade*	*County*
A	Fairfax	C+	Broward
A	Maricopa	C+	Franklin
A–	Baltimore	C+	Hamilton
A–	Oakland	C+	Harris
A–	Orange	C+	Sacramento
B+	Hennepin	C	Clark
B+	Prince Georges	C	Riverside
B+	San Diego	C	Suffolk
B	Alameda	C–	Fulton
B	Anne Arundel	C–	Hillsborough
B	Erie*	C–	King
B	Mecklenburg	C–	Los Angeles
B–	Contra Costa	C–	Palm Beach
B–	Cook	D+	Cuyahoga
B–	Dallas	D+	Miami-Dade
B–	Milwaukee	D+	Nassau
B–	Montgomery	D+	San Bernardino*
B–	Shelby	D+	Santa Clara
B–	Wayne	D	Allegheny
B–	Westchester	D	Monroe

Source: Campbell Public Affairs Institute, *The Government Performance Project: County Grade Reports 2002,* March 2002, at www.maxwell.syr.edu/gpp/grade/county_2002/grades.asp.

*Erie and San Bernardino counties did not return questionnaires but were assigned grades by the expert panels.

Approving the Procurement of IT Systems and Hardware, perhaps indicating a tactical concern about budget rather than strategic issues (Table 2).

COUNTY GRADES FOR THE INFORMATION TECHNOLOGY PERFORMANCE AND SISP[7]

County IT grades (Table 3) assigned by the GPP judges range from high (A) to low (D). Although grades are assigned based on seven criteria such as training, procurement, the ability to communicate and provide services, etc., lower grades also are related to absence of strategic planning, which is one of the seven criteria.

The grades assigned by the expert judges seem to reflect a weak relationship between strategic planning and the presence or absence of strategic planning. Only 6 of the 38 (15.6%) respondents reported not having a countywide information technology strategic plan in place or in progress. Three of these received a grade of C through B. The 32 counties reporting having an information technology strategy in place or in progress were assigned grades ranging from high (B+

Table 4. Counties Reporting Countywide Information Technology Strategic Plans

Does your county have a countywide information technology strategic plan?

N = 38	*Yes*	*In progress*	*No*	*Total*
GPP assigned county IT grade of B+ or higher	7	1	0	8
GPP assigned county IT grade of B through C	14	2	3	19
GPP assigned county IT grade of C– or lower	4	4	3	11
Total	25	7	6	38

Source: D. Dufner, L. Holley, & B. J. Reed, Strategic information systems planning models for county government, *Communications of the Association of Information Systems, 11* (2003), 219–244.

or better) to low (C– or lower). In addition, over two-thirds (8 of 11) of the counties assigned IT grades of C– or below reported having a countywide IT strategic plan in place or in progress (Table 4).

Countywide, SISP is further called into question by the responses to the following GPP survey item:

Of the 38 (59.46%) counties that responded to the GPP question "Does your county have a countywide information technology strategic plan?" most, 25, reported having a countywide information technology strategic plan in place (Table 4). Six counties reported having no plan in place or in progress. This is inconsistent with the degree of involvement shown in Table 1, which indicates that actors at the strategic level of county planning are not involved in strategic key management functions (with the possible exception of Approving Procurement of Systems and Hardware).

In addition, the data (Table 4) suggest a weak relationship between countywide SISP and grades for overall IT performance. Only 25 of the respondents reported having an information technology strategic plan in place. This same weak relationship between grades and SISP was observed at the statewide level (Holley et al., 2002; Dufner, Holley, & Reed, 2002). The relationship between SISP and grade for overall IT performance seems to be a fruitful area for further investigation (Dufner, Holley, & Reed, 2003).

The seven counties receiving an IT grade of B+ or higher reported having a countywide IT strategic plan in place. Four counties with IT grades of C– or lower reported having a countywide IT strategic plan in place, and four reported having a plan in progress. The remaining counties received grades of B through C inclusive and reported a countywide IT plan in place ($n = 14$), in progress ($n = 2$), or not in progress ($n = 3$). Moreover, 32 respondents reported having

countywide SISP in place or in progress, yet only 20 of these reported having an IT component in their overall strategic plan.

Closer investigation of the descriptive material for the counties receiving high grades, such as Baltimore (A–), Fairfax (A), Maricopa (A), Oakland (A–), and Orange (A–), shows counties graded with an A– or A have IT governance structures designed to compensate for the fragmented, and inherently short-term, political governance structures of county government. Structures in these counties support implementation of reasonable facsimiles of the private-sector strategic information systems model. By contrast, the counties graded low (C– or less) seem stymied by their county governance structures, which trap IT in a nonstrategic, tactical role.

SISP IN COUNTY GOVERNMENTS

Several studies have suggested that characteristics of government mitigate against SISP. A U.S. General Accounting Office (GAO) survey (2001) found a gap between practices of federal government CIOs and CIOs of leading organizations similar to the gap revealed at the county level by our analysis of the GPP county survey data. A similar gap was discovered through analysis of the GPP state data (Holley et al., 2002; Dufner et al., 2002). The GAO analysis remarks, "It is possible that the business context for Federal CIOs is sufficiently different from that of CIOs in leading organizations that lessons learned may not be applicable" (U.S. GAO, 2001). For a government to have SISP, its CIOs would be expected to participate in discussions of government-wide business strategy (U.S. GAO, 2001; Caudle, 1996).

Results of examination of GPP survey and descriptive data about high- and low-graded counties are consistent with the GAO results. Counties such as Maricopa and Fairfax have structured IT governance so as to include SISP expertise in the process of making decisions about county missions and goals. These counties have structured IT authorities and organization to use IT in a manner paralleling the process used by leading business organizations.

Analysis of the data from the GPP survey indicates that the majority of counties reporting they have SISP have instead nonstrategic, tactical information technology planning. This finding parallels findings about SISP at the state level (Holley et al., 2002).

COMPARING COUNTY LEVELS OF INVOLVEMENT TO STATE LEVELS

Comparing the county levels of involvement in the three strategic IT functions to state levels of involvement reveals patterns that are similar (Table 5), with two exceptions. First, a distinction exists between low involvement for county-level individual departments (modes of 3) and higher involvement for individual state agencies (modes of 4). Second, the modal levels of involvement differ at the top elected levels. For the chief elected county official, levels are too low to indicate engagement in the strategic aspects of IT planning (ranging only up to 3) other

Table 5. A Comparison of Involvement of Officials in State and County Strategic Information Systems Planning (percent of responses at the mode)

County				*State*			
Stakeholders	*Making policy about design and use of IT systems*	*Developing IT strategic plans*	*Approving the procure-ment of IT systems and hardware*	*Stakeholders*	*Making policy about design and use of IT systems*	*Developing IT strategic plans*	*Approving the procure-ment of IT systems and hardware*
County board, council, or commission	1 32.4%	1 43.2%	5 30.0%	State legislature	1 43.8%	1 62.5%	1 47.9%
Legislative committee(s)	1 48.3%	1 58.6%	1 62.1%	Legislative committee(s)	1 37.5%	1 54.2%	1 45.8%
Chief elected official	2 and 3 26.7%	3 36.7%	5 36.7%	Governor's office	5 31.3%	5 31.3%	1 35.4%
Chief administrative officer	3 29.7%	2 35.1%	3 32.4%				
Executive committee(s)	3 2.1%	3 35.7%	1 35.7%	Executive committee	4 28.2%	5 30.8%	1 46.2%
Chief information officer	5 87.5%	5 90.6%	5 75.0%	Chief Information Officer	5 93.3%	5 95.6%	5 66.7%
Central county IT office	5 59.9%	5 63.2%	5 47.4%	Central IT office	5 56.3%	5 68.7%	5 60.4%

	5	5	3		5	5	1
IT steering committee	32.3%	32.3%	29.0%	IT steering committee	39.6%	35.5%	37.5%
	3	3 and 4	3		5	5	5
Individual departments	31.6%	26.3%	36.8%	Individual state agencies	29.2%	58.3%	45.8%
	1	1	1		1	3	1
IT end-users	52.6%	44.7%	65.8%	IT end-users	41.7%	33.3%	58.3%
	1	3	1		1	1	1
External consultants	55.3%	36.8%	81.6%	External consultants	58.3%	43.8%	87.5%
	1	1	1		1	1	1
External vendors	86.8%	68.4%	84.2%	External vendors	77.1%	68.8%	98.8%
	1	1	1		1	1	1
Citizens	73.7%	65.8%	89.5%	Citizens	62.5%	77.1%	93.8%

Note: The Modal Level of Involvement Scale ranges from 1 (not involved) to 5 (very involved).

than fiscal aspects (Approving the Procurement of IT Systems). On the other hand, involvement of governors' offices in Making Policy About Design and Use of IT Systems, and Developing IT Strategic Plans or SISP are higher and may indicate that SISP occurs in the executive branch of state governments. The absence of legislative involvement, however, would suggest that IT is not part of enacting the strategic goals of the state. County boards, councils, or commissions, and legislative committees are similarly not involved (modes of 1) in other than fiscal aspects of IT planning.

Otherwise, the patterns of involvement of county stakeholders and state stakeholders are parallel and indicate that, with the exception of state-level executive branch involvement, IT planning is conducted at levels below the executive and legislative elected officials. State and county CIOs and central IT offices all have modal levels of involvement of 5, "very involved," in all three strategic IT functions. The role of IT steering committees is of interest because both state and county committees are "very involved" in two strategic IT functions (Making Policy About Design and Use of IT Systems, and Developing IT Strategic Plans)—a pattern that may indicate the role of the committees is to work with state executive branch or county IT staff. Other stakeholders—IT end-users, external consultants, external vendors, and citizens—are similarly not involved, with modes up to 3.

Limitations

Many of the limitations reported for the state survey (Holley et al., 2002) apply to the county survey. The methodology and survey instruments were intentionally made similar to facilitate comparison of state and county findings. Some of the counties used the survey instrument to communicate a great deal of information to support responses to questions or to serve as substitute for answers to questions. While this information in many cases was helpful, occasionally the "boiler plate" responses were not useful. These responses were difficult and time-consuming to code.

As with any scaled questionnaire, the data are limited to one dimension. However, the expert evaluator ratings of IT performance are based on comprehensive data and compensate to some extent for this deficiency.

The state study included all 50 states, while the county study included a sample of the 38 largest counties selected on the basis of revenue within regions. Conclusions based on quantitative analysis of these data need to be verified by several more years of data collection—both to study a broader range of counties and to expand data available for the 38 counties in this study. Moreover, the results of the Cronbach coefficient alpha analysis may indicate a lack of granularity in the survey instrument for the scales measuring actor involvement.

Another limitation of the survey is that it reflects information systems planning at lower echelons in county government only indirectly. The focus of the survey is county government–wide information technology planning. The grade given by the expert panel is a composite score intended to reflect the evaluation of county government–wide IT. This focus may mask or merge planning efforts that are less than county government–wide and limit the usefulness of county grades as indicators of information systems planning. It also confounds planning with other aspects of IT management. This suggests the need for further study.

Conclusions

These findings suggest that SISP is not happening in many large counties. Similar to state government patterns of involvement in IT planning, the patterns of county government actors show an operational as opposed to a policy or "strategic" planning bias.

Very few strategic-level elected county boards, councils, or commissions (16.2 %) are "very involved" in SISP. At the unelected career level, on the other hand, CIOs and central county IT offices are "very involved," at 96.9 and 81.6 percent respectively.

The county findings in parallel with state findings are consistent with the suggestion of Bozeman and Bretschneider (1986) that the highest level of IT planning should be below the level of politically elected or appointed officials in order to obtain the longest-range planning horizon possible for government. Middle managers may be the ones looking ahead (Caudle, Gorr, and Newcomer, 1991). These results are consistent with findings of this and other studies (Bretschneider, 1990).

In most counties, IT planning occurs where career managers such as the county CIO and those from the central county IT office plan strategically within the limitations of their authority. This contrasts with SISP models (Segars, Grover, & Teng, 1998) where SISP is initiated at the top layers of management, and SISP is comprehensive and coordinated with a commitment to long-term goals.

Effective SISP in county government faces more impediments than those we reported at the statewide level (Holley et al., 2002) because of the constraints and expectations placed on counties by state and federal governments. Even though county governments do not perform SISP according to the model, and democratic processes serve to slow down and impede planning, democratic accountability is the intended outcome of the checks and balances embedded in the structure of U.S. governments at the county, state, and federal levels. Acknowledging and understanding impediments, however, informs expectations. SISP models cannot be transplanted directly from the private sector and be used effectively in the public domain. Results of this study of county governments and

SISP support the thesis that differences in environment and circumstances between the sectors affect the operation and efficacy of SISP. Approaches to SISP that are suitable for the distinctive character and context of governments need to be developed for the public sector, and evaluations comparing SISP in the private and public sectors should acknowledge and account for sector differences.

The wealth of information gathered by the GPP has brought us closer to understanding government planning challenges. Even though corporate SISP models cannot be transplanted easily to the public sector, we now understand much more about planning structures, constraints, and the unique opportunities offered by a planning process that is democratic by definition and demand. This understanding can serve as a stepping-stone to develop or modify a SISP model for successful and seamless application in U.S. governments.

Notes

1. The term *largest* was defined within regions by county revenue ($n = 40$).

2. Information technology planning in state government is the focus of the first papers in the series. For more information, see Holley, Dufner, & Reed, 2002.

3. The first paper in this series (Holley et al., 2002) contains a detailed literature review and discusses the historical foundations of SISP in government. These sections are not duplicated in this article.

4. See Appendix B for GPP criteria for evaluation of information systems and technology management.

5. The National Commission on the Public Service (1990) made this observation about federal officials. The National Commission on the State and Local Public Service (1993) made a similar observation about state officials. Most terms of office for elected members of county governing boards, councils, or commissions are two years (Coppa, 2000).

6. The GPP criterion measures of success for Information Technology Management are shown in Appendix B.

7. The performance criteria (Appendix B) guiding GPP assignment of grades focus on aspects of information systems and technology considered critical to the performance of public organizations.

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APPENDIX A

GPP QUESTIONNAIRE ITEMS ANALYZED FOR THIS RESEARCH

Question 12 (V Indicates Variable)

"We would like to understand the relative level of involvement of the various actors who perform key information technology management functions in your county. In each column below, please rank the level of participation of each actor on a scale of 1–5, where a rank of one indicates that a particular actor is *not involved* and a rank of 5 indicates that a particular actor *is very involved*" (State Information Technology Management Survey, 2001, p. 22).

Subjects were asked to "rank" the level of participation (from 1 to 5) for each cell in the following matrix. A rank of 1 indicates that a particular actor is *not involved* and a rank of 5 indicates that a particular actor is *very involved.*

	Making policy about design and use of IT systems	*Developing IT strategic plans*	*Designing and developping IT systems and projects*	*Approving the procurement of IT systems and hardware*	*Overseeing the implementation of IT systems, and projects*	*Overseeing the implementtation*
County board, council, or commission	V1	V2	V3	V4	V5	V6
Legislative committee(s)	V7	V8	V 9	V 10	V11	V12
Chief elected official	V13	V14	V15	V16	V17	V18
Chief administrative officer	V19	V20	V21	V22	V23	V24
Executive committee(s)	V25	V26	V27	V28	V29	V30
Chief information officer	V31	V32	V33	V34	V35	V36
Central county IT office	V37	V38	V39	V40	V41	V42
IT steering committee	V43	V44	V45	V46	V47	V48
Individual departments	V49	V50	V51	V52	V53	V54
IT end-users	V55	V56	V57	V58	V59	V60
External consultants	V61	V62	V63	V64	V65	V66
External vendors	V67	V68	V69	V70	V71	V72
Citizens	V73	V74	V75	V76	V77	V78

Scale from not involved = 1 to very involved = 5 (V indicates variable)

Question 13 (V Indicates Variable):

Please answer the following questions about information technology planning:

a. Does your county have a countywide information technology strategic plan?

V 79 Yes or No, and if yes:
V 80 What time frame does it cover? (*fill in blank)*
V 81 When was it last *formally revised?* (*fill in blank,* MM/YY)
V 82 How frequently is the plan reviewed? (*multiple choice:* 6 mos to 10 years)

Which of the following components does it include? (*Check all that apply*)

V 83 A vision statement
V 84 A mission statement
V 85 Specific core values
V 86 Specific long-term goals (beyond 1 year)
V 87 Specific short-term objectives (1 year or less)
V 88 Specific performance measures for each goal
V 89 Specific performance measures for each objective
V 90 Specific benchmarks for each goal
V 91 Specific benchmarks for each objective
V 92 Clear assignment of responsibility for achievement of each objective
V 93 Discussion of action plans designed to achieve each objective
V 94 Discussion of key external factors that may affect achievement of each objective
V 95 Discussion of resources required to achieve each objective

V 96 Discussion of how input from external stakeholders was included in the plan.
V 97 Other components (*Please specify . . .*)

b. Is there an information technology component to your county's overall strategic plan? (no, yes, or in progress) V98
c. What proportion of individual county departments have information technology strategic plans in place? (100%, over 60%, 40–60%, less than 40%, none) V99
d. If individual county departments have overall strategic plans, what proportion have an information technology component to them? (100%, over 60%, 40–60%, less than 40%, none) V100
Overall County Grade for IT Performance* V101

*Variable added by the authors from Government Performance Project (2000).

APPENDIX B

GPP CRITERIA FOR ASSIGNING GRADES TO COUNTY INFORMATION SYSTEMS AND TECHNOLOGY MANAGEMENT PERFORMANCE

Campbell Public Affairs Institute, Government Performance Project (www.maxwell.syr.edu/gpp/grade/county_2002/criteria_ITmanagement.asp)

Assessment Criteria
The Government Performance Project Information Technology (IT) focuses on seven key criteria: (1) Architecture; (2) Management Support; (3) Planning; (4) Citizen Involvement and Engagement; (5) Cost-Benefit Analysis; (6) Procurement; and (7) Training.
Each criterion has specific elements that helped frame the components of each. These are provided below.

Criterion 1: Architecture
Appropriate mix of centralized and decentralized hardware and software systems for consistency of capacity across the county government in support of key functions such as human resources management and financial management
Quality and level of integration across various management systems to provide timely access to information
Standardization of hardware and software systems across county government agencies and divisions necessary to support management processes
Consistent enforcement of architecture policies and systems to ensure standardization and integration

Criterion 2: Management Support
The depth and breadth of support provided by IT systems within the county for key management functions, including financial management, human resource management, capital management, and managing for results mechanisms by which integrated and timely IT systems support key management functions
The quality of integrated tools such as geographic information systems in improving support for county agency activities
The level of centralized executive leadership in the form of a chief information officer or equivalent
Level of clarity and understanding of appropriate centralized and decentralized functions of IT
The appropriate mix of executive, legislative, internal, and external stakeholders'

involvement in the design, improvement, and implementation of county IT systems
Quality and design of management systems that track implementation and resolve problems associated with implementation of IT systems
The integration of telecommunications with other IT and county management systems

Criterion 3: Planning
The completeness and comprehensiveness of the county's strategic plan, and the frequency in which that plan is reviewed and revised
The level to which IT components are included in the countywide strategic plan
The level of IT planning that occurs countywide and within individual agencies
Mechanisms in place to ensure adequate review and assessment of IT planning efforts

Criterion 4: Citizen Involvement and Engagement
Overall support of information technology to the county government's ability to communicate with and provide services to its citizens
Quality of the transmission and receipt of information to citizens about policies and services
Quality of the transmission and receipt of information to other governmental agencies
Quality of the transmission and receipt of information to nongovernmental agencies
Quality of geographic information system and its ability to support county agencies and their efforts to serve citizens

Criterion 5: Cost/Benefit Analysis
Capacity of county government to evaluate and validate the extent to which IT system benefits justify their costs
Level of evaluation of both monetary and nonmonetary costs and benefits prior to purchase and at full implementation
Frequency of evaluation of costs and benefits
Processes developed and used to link cost benefit analysis into decision-making on IT systems

Criterion 6: Procurement
Capacity of county government to procure IT systems in a timely manner
Level of centralization of procurement processes for both large- and small-scale IT systems
Participation by end-users in the procurement process
Timing of procurement process including development of request for proposals and length of time to award
Use of master contracts and the time from development to length of time to award

Criterion 7: Training
Quality and level of IT training for both end-users and IT specialists
Requirements for IT training of end-users and IT specialists
Frequency of IT training for end-users and IT specialists
Level of standards for IT training

Methodology

In April 2001, the Government Performance Project administered a survey that included a section about information technology management practices to 40 of the largest counties by revenue. All but 2 of the 40 counties completed and returned at least some of the survey for a response rate of 95 percent. Additional documentation was used to evaluate the two counties that did not respond to the survey.

The IT section of the survey included 22 multi-part closed- and open-ended questions designed to yield information about a given county's capacity with respect to each of the criteria described above. An initial survey was pretested in four states, four local

governments, and four federal agencies in 1997. Based on this pilot study, the instrument was revised and streamlined to focus as directly as possible on the evaluation criteria and customized to each level of government. After completing a survey of 50 states in 1998 and 2000 and a survey of the 35 largest cities by revenue in 1999, the survey was once again revised to correct weaknesses in the design uncovered as part of these survey processes. The survey was also pretested among selected counties in advance of the final survey instrument being completed.

As discussed above, the GPP IT survey was designed to assess seven criteria. The data from the survey were coded by criteria, and each response was weighted by letter grade from A to F based on the response provided. Each set of question responses was then evaluated within each criteria to develop an overall grade for each criterion, again ranging from A to F. Finally, each criterion was individually weighted as follows:

Criterion 1	25%
Criterion 2	25%
Criterion 3	15%
Criterion 4	15%
Criterion 5	10%
Criterion 6	5%
Criterion 7	5%

Based upon these percentages, each individual criterion section was ranked, and a composite letter grade score was derived for each county.

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