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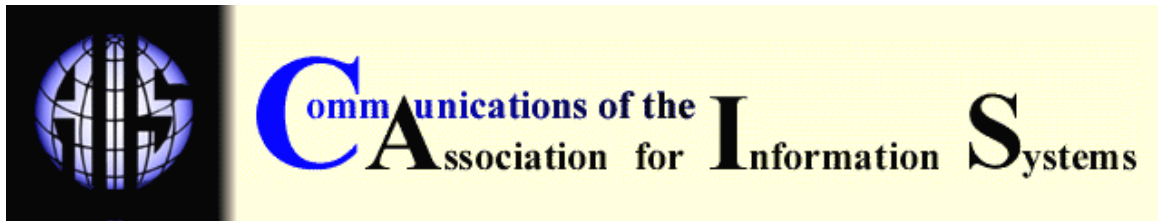
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CAN PRIVATE SECTOR STRATEGIC INFORMATION SYSTEMS PLANNING TECHNIQUES WORK FOR THE PUBLIC SECTOR?

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ABSTRACT

This study investigated strategic information technology planning (SISP) at the statewide level. Even though thirty-eight states reported having a strategic information technology plan in place and ten reported having a plan in progress; analysis of the data shows that the executive and legislative or highest levels of state government are “not involved” in SISP. A lack of integrated statewide governmental strategic information systems planning (SISP) suggests that SISP as defined by private sector models may not be accomplished easily in the public sector. Significant differences in the process of setting organizational objectives, planning horizons, and stakeholder involvement are barriers to public sector application of private sector SISP models which few states seem to have overcome.

KEYWORDS: strategic information systems planning (SISP), statewide strategic planning, state government, strategic information systems planning models

I. HISTORICAL BACKGROUND

Historically, the application of private sector models for Strategic Information Systems Planning (SISP) to the public sector is a controversial issue. In 1986, a special issue of the *Public Administration Review* [Bozeman and Bretschneider, 1986] focused attention on the need for research to guide public sector information systems and technology practice. A recent review of empirical research considering both public and private sector IT indicates results typically point to important sectoral differences [Rocheleau and Wu, 2002]. For example economic considerations, while present, are less dominant in the public sector, and IT is placed lower in the hierarchies of public organizations than in the private sector [Bretschneider, 1990; Caudle, 1996; Caudle, Gorr, and Newcomer, 1991].

The most distinct sector difference identified by Caudle, Gorr, and Newcomer [1991] is the private sector’s pursuit of strategic competitive advantage and the consequent safeguarding of IT and information as a proprietary strategic asset. In government, IT and information are public property not a proprietary resource to be protected and exploited for competitive advantage

[Bajjalay, 1999; Rocheleau and Wu, 2002; Caudle, Gorr, and Newcomer, 1991]; even though some systems' designs may be protected for the public good (e.g., the Internal Revenue Service System's audit triggers are confidential to prevent fraud).

Government managers are encouraged to share information with other agencies and may even be rewarded for doing so. Conversely, in the private sector, IT managers are rewarded for making proprietary use of IT to improve competitive advantage and contribute to the bottom line.

Important conditions considered necessary for strategic information systems and technology planning in the private sector may not exist in many U.S. state governments. Consistent with previous theoretical work, an empirical study of private sector firms conducted by Segars, Grover, and Teng [1998] found successful SISF is associated with:

- a high degree of economic rationality,
- continuous planning processes,
- direction by top executives, and
- engagement of functional and operational department heads.

In state government, elected representatives make the fundamental policy decisions defining statewide mission objectives. However, the Governor, as CEO, may have limited budget and appointment authority over state agencies. Elected officials preside over the loosely coupled structure of state government including agencies that may receive independent funding streams from the Federal Government. This structure tends to distance functional and operational department or agency heads from top level decision processes, and results in decentralization and fragmentation of any statewide planning efforts.

In addition, time constraints inherent in government election and budget cycles may further mitigate against economic rationality and a continuous and consistent long term planning process [Guy, 2000]. The political context of government may not provide an analogue for the competitive market pressures driving SISF in the private sector.

Public and private sector environments differ; suggesting, *prima facie*, public and private strategic planning could, and perhaps should, differ. This conclusion is bolstered by support in the SISF literature for an approach to planning that is situation-regarding and contingent [Doherty, Marples, and Souhaimi, 1999; Segars, Grover and Teng, 1998]. Differences in structure and context between the public and private sectors suggest that private sector SISF research results, experience, and best practices may not be generalizable to the public sector. Application of private sector SISF models in the public sector may not be feasible given the differences in structure, legal responsibilities, stakeholders, and planning horizons. The research questions addressed in this study investigate these issues.

The article is organized as follows. Section II discusses the SISF construct, as it is understood in the literature. The research questions are presented in Section III. The methodology described in Section IV is used to create the findings reported in Section V. The appendices present the questionnaire items analyzed and the information technology criteria used for analysis.

II. THE SISF CONSTRUCT

Strategic planning is fundamental to an organization. It shapes organizational objectives, and how they are accomplished [Boar, 2001; Bajjalay, 1999; Doherty, Marples, and Souhaimi, 1999; Segars, Grover, and Teng, 1998; Bryson and Alston, 1996; Bryson, 1995]. "Strategic" information and technology planning is focused on more than user demand and financial justification. The appellation "strategic" information systems and technology planning refers to a convergence of means and outcomes. As means, information technology is so important that it must be a part of the process of establishing strategic objectives to produce the expected outcomes [U.S. General Accounting Office (GAO), 2001; Balutis and Kiviat, 1997].

The literature describing private sector strategic information system planning (SISF) consistently maintains SISF is critical to achieving a strategic competitive advantage or profitability for an enterprise [Boar, 2001; Rocheleau, 2000; Bajjalay, 1999; Doherty, Marples, and

Suhaimi, 1999; Segars, Grover, and Teng, 1998; Bryson and Alston, 1996; Bryson 1995; Clark, 1992; Nierderman et al., 1991; Lederer and Sethi, 1998, 1996]. The external economic context focuses the attention of top business organization levels on SISP.

Conversely, research on IT in the public sector indicates management and planning for IT are performed lower in the hierarchies of public organizations [Rocheleau and Wu, 2002; Bretschneider, 1990; Caudle, Gorr, and Newcomer, 1991]. The apparent lack of emphasis on SISP as a top down practice at a statewide level can partially be explained by the differences between public and private entities [Guy, 2000; Allison, 1979].

Guy [2000] states:

- “Public agencies usually have a larger number of competing goals,
- Public agencies operate under public scrutiny,
- Public managers operate under fragmented authority structures,
- Public organizations have more legal restrictions on their actions; and
- Public organizations have more restrictions on their staffing—they cannot hire, fire, or promote as flexibly.”

Allison [1979] constructed a similar, although more succinct, list of differences:

- “Time perspective,
- Duration of entity (governments are basically there forever),
- Measurement of performance (bottom line versus top line),
- Personnel constraints (restrictions on hiring, firing and promoting),
- Equity/efficiency (goals not always focused on economic efficiency rather also on equity),
- Public processes (role of press and media), and
- Legislative/judicial impact (fragmented structure of control and authority)”

These differences clearly impact the adoption and successful application of SISP models from the private sector. Driven by other more complex factors, the economic impetus, which is so important for private sector SISP, is either non-existent or much weaker for public entities.

SISP AND SETTING ORGANIZATIONAL OBJECTIVES

In the business world, strategic objectives and use of information systems and technology (IST) to achieving objectives are tightly coupled; IST must be weighed as a part of the process of establishing strategic objectives [Rocheleau, 2000; Balutis and Kiviat, 1997]. Consideration of the use of IT to achieve strategic goals and objectives is a fundamental part of the process of selecting the strategic objectives that contribute the most value to the organization.

In state government, strategic objectives are selected through a process of political compromise among a wide variety of external and internal interest groups typically with diverse needs and goals [Guy, 2000; Rocheleau, 2000; Allison, 1979]. IT issues are often not considered in that process. IT is an ancillary tool rather than a fundamental component in the setting of goals and objectives.

In the business world, the processes of setting objectives and carrying them out are closely integrated; while in government these processes are loosely coupled [Rocheleau, 2000]. Although imperfect, the separation in government between setting objectives and carrying out objectives is supported by extensive research and scholarship [Henry, 2001; Wood and Waterman, 1994; Fesler and Kettl, 1991; Abney and Lauth, 1986].

The loosely coupled structure of government impedes consideration of operational issues at the time objectives are established. For example, an objective might be to “prevent terrorist attacks” or “reduce unemployment” [Caudle, Gorr, and Newcomer, 1991]. At the time elected officials negotiate to set objectives such as these, feasibility and operational aspects may not be fully considered. In the private sector, however, the processes of setting strategic objectives and then making budget allocations are integrated and tightly coupled.

In government these processes are not directly connected. Separation of setting objectives and planning implementation, to the extent it exists, precludes “strategic” information

and technology planning. In state governments, the CIOs may not be at the table to provide the feedback necessary for creating an integrated and feasible Strategic Information Technology Plan linked to the achievement of strategic objectives established by elected officials.

“ It is an uncontested fact that if IT is not on the governor’s agenda, it will bridle the far reaching capabilities of the CIO office.” [Lee, 2001]

THE PLANNING HORIZON

Long-term focus is regarded as an essential feature of “strategic” information systems and technology planning [Segars, Grover, and Teng, 1998]. In government, objectives are set by elected or appointed officials who focus on achieving visible results within two years or less [National Commission on the State and Local Public Service, 1993; National Commission on the Public Service Leadership for America: Rebuilding the Public Service, 1990]. Elected officials are responding to the dictates of short election and budget cycles, which lead to compressed planning horizons [Guy, 2000; Caudle, Gorr, and Newcomer, 1991; Allison, 1979].

Bajjal’s [1999] nationwide study found that the only long-term objectives communicated to state information resource managers are focused on budgetary and operational efficiency. Budgetary and operational efficiency are not strategic objectives. Further, the planning horizon of governors is different from that of legislators because term lengths vary and terms of service are staggered differently. Given these realities, a limited planning horizon would be an expected consequence of loosely coupled state governments with relatively rapid turnover of elected officials at the executive level.

STAKEHOLDER INVOLVEMENT

Participation or breadth of involvement describes the number and diversity of stakeholders and interests impacting the strategic planning process [Guy, 2000; Lederer and Sedhi, 1998; Sabherwal and King, 1995; Allison, 1979]. Stakeholders charged with SIS in the private sector are internal to the organization or share a common goal, long-term profitability of the enterprise. Even the few external stakeholders, such as vendors, are interested in the long-term profitability of the organization.

Many stakeholders are involved with the setting of strategic objectives for state government. They are both internal and external to the state government organization. External stakeholders include but are not limited to technology vendors, other external constituencies, special interest groups, and the individual citizens [Dawes, et al., 1997]. Internal stakeholders include but are not limited to executive and legislative officials, governmental employees, and employee unions.

In government, external and internal stakeholder goals and objectives are often conflicting. For example, external stakeholders may include both environmentalists and petroleum interests. Internal stakeholders may include politicians with short-term political interests and career employees with long-term bureaucratic interests. Furthermore, the interests of the internal and external stakeholders may conflict with one another.

In public organizations, it is much more likely that plans will remain plans unless large numbers of internal and external stakeholders are engaged in the planning process to ensure that disgruntled stakeholders do not present obstacles to implementation [Bryson and Alston, 1996; Bryson, 1995; Newcomer and Caudle, 1991].

Inclusion of both internal and external stakeholders in setting strategic objectives is a requirement of the democratic process even though interests may conflict. Although important to ultimate success, a democratic planning process can be expected to mitigate the coherence and timeliness of planning by prolonging the process.

III. RESEARCH QUESTIONS

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

- To what extent is strategic information systems technology planning (SISP) carried out by U.S. state governments?

- If SISP is carried out, to what extent, if any, does it differ from standards for private sector SISP suggested by the literature?

IV. METHODOLOGY

The analysis presented and discussed here is based on data from the Government Performance Project (GPP) survey of U.S. state governments conducted by Syracuse University in 2000. The data were made available for analysis in 2001 [Government Performance Project State Survey, 2000]. Only two questions, 9 and 10, (Appendix I) from the survey data were analyzed for this study. These two questions which deal with “key information technology management functions” and strategic information systems planning are the most relevant to IT planning.

Responses to the two questions describe the design of the state Information Technology (IT) planning function and roles played by different actors (stakeholders) such as the state legislature, the governor’s office, and the chief information officer.

Question 9 asked respondents to rank the level of participation by key actors for six Key IT Management Functions (Table 1), the second of which is SISP.

Table 1. Key IT Management Functions (Question 9)

1.	Making Policy about design and use of IT systems,
2.	Developing IT Strategic Plans (SISP),
3.	Designing and developing IT Systems and Projects,
4.	Approving the procurement of IT Systems and Hardware,
5.	Implementing IT Systems and Projects, and
6.	Overseeing the implementation of IT Systems and Projects.

Question 10 asked respondents to describe SISP in their state government. Although the data presented here represent only two questions from the questionnaire, 96 variables are involved (Appendix I).

Expert judges at Syracuse University also assigned states grades for overall IT performance. State grades, shown in Table 2, are the 97th variable.

POPULATION STUDIED

Fifty questionnaires were distributed by the Maxwell School of Citizenship and Public Affairs at Syracuse University, one to each state. Forty-eight were returned and these form the pool of data that were analyzed. Two states did not return the questionnaire, Connecticut and Florida. The Information Technology portion of the questionnaire, which was used for this study was completed by the state CIO or equivalent or their designee.

The GPP survey evaluates the overall performance of state governments and performance in five specific areas as well:

- IT management,
- financial management,
- human resource management,
- capital management, and
- managing for results.

Much information about performance in these areas is public information. As a result, GPP judges are able to assign grades using criterion measures of success (Appendix II) whether

or not a completed GPP questionnaire is returned. Consequently, IT performance grades are shown in Table 2 for all 50 states.

Table 2. State Grades for Information Technology

State	Information Technology Grade	State	Information Technology Grade
Alabama	C-	Montana	C
Alaska	B	Nebraska	C+
Arizona	B-	Nevada	C-
Arkansas	C-	New Hampshire	C
California	B-	New Jersey	B
Colorado	C	New Mexico	C+
Connecticut	C+	New York	B
Delaware	B	North Carolina	B+
Florida	C+	North Dakota	B-
Georgia	C+	Ohio	B-
Hawaii	C-	Oklahoma	B-
Idaho	B	Oregon	C
Illinois	C+	Pennsylvania	B+
Indiana	B-	Rhode Island	D
Iowa	B	South Carolina	B
Kansas	A-	South Dakota	B
Kentucky	B+	Tennessee	B+
Louisiana	B-	Texas	B-
Maine	B-	Utah	A
Maryland	B	Vermont	C+
Massachusetts	C	Virginia	A-
Michigan	A-	Washington	A
Minnesota	B	West Virginia	C-
Mississippi	C+	Wisconsin	B-
Missouri	A-	Wyoming	C-

Source: Government Performance Project [March, 2000]

Note: Two states (CT and FL) did not respond. Hence, data about them are not included in the sample studied.

THE SURVEY INSTRUMENT

The GPP questionnaire contained a combination of open-ended and closed-ended questions. Most states adapted the original questionnaire to fit their own response requirements or unique manner of doing planning. Some states treated the "Likert-like" scales or closed-ended questions as an opportunity to provide detailed elaboration. For example, states doing project-based planning responded "N/A" to questions about state government-wide planning and proceeded to describe their project based planning instead.

DATA ANALYSIS

Data analysis consisted of first coding the rather complex responses of many states and then conducting both a qualitative and quantitative analysis of the data. Both SPSS and SAS were used to conduct the data analyses. SPSS was used for the initial descriptive analysis (means and frequencies). SAS [SAS/STAT Users's Guide, 1999] was used to perform the Duncan [Robinson, 1959] test for differences in means, the Principal Components Factor Analysis, the Cluster analysis, to graph the actor/task groups for visual inspection of the data, and the Cronbach's Coefficient Alpha analyses.

3) indicate that SISP is conducted rather consistently at levels below the elected executive and legislative officials for the states.

Table 3. Mean and Standard Deviations for Level of Involvement of Actors in Key IT Management Functions

Mean and Standard Deviation of Level of Involvement												
Actor/Stakeholder	1. Making IT Policy		2. SISP		3. Designing Developing IT Systems		4. Approving IT Procurement		5. Implementing IT Systems		6. Overseeing Implementation	
	Mean	Std Dev	Mean	Std Dev	Mean	Std Dev	Mean	Std Dev	Mean	Std Dev	Mean	Std Dev
1. State Legislature	2.29	1.43	1.54	.87	1.21	.68	2.2	1.47	1.17	.48	1.96	1.30
2. Legislative committee	2.23	1.21	1.60	.80	1.19	.53	2.19	1.41	1.32	.72	2.17	1.21
3. Governor's office	3.48	1.39	3.44	1.41	1.64	.86	2.52	1.41	1.67	.95	2.73	1.38
4. Executive committee	3.30	1.47	3.38	1.52	1.85	1.12	2.38	1.58	1.80	1.11	2.60	1.55
5. CIO	4.93	.25	4.96	.21	3.67	1.29	4.44	.92	3.47	1.42	4.31	.90
6. Central IT office	4.33	1.01	4.44	1.03	4.27	1.07	4.28	1.19	4.10	1.22	4.00	1.22
7. IT steering committee	3.93	1.25	3.73	1.34	2.40	1.32	2.40	1.42	2.06	1.36	2.80	1.47
8. Individual agencies	3.56	1.22	4.38	.87	4.67	.63	3.85	1.34	4.713	.61	4.52	.85
9. IT end-users	2.17	1.17	2.60	1.19	3.42	1.23	2.06	1.48	3.19	1.30	2.54	1.41
10. External consultants	1.51	.77	1.75	.77	3.43	.87	1.11	.31	3.43	.85	2.66	1.04
11. External vendors	1.25	.48	1.35	.56	3.04	1.25	1.04	.20	3.38	1.12	2.46	1.18
12. Citizens	1.73	1.19	1.31	.79	1.38	.67	1.40	.61	1.15	.30	1.10	.92

(Scale 1 = not involved to 5 = very involved)

Two differences may contribute to the lack of top down strategic planning that we see:

- Loosely integrated state structures may prohibit the degree of formalization necessary for SISP initiated at the topmost levels of state administration. Formalization of structures, techniques, written procedures and policies are necessary for SISP (Lederer & Sethi, 1996; Sabherwal and King, 1995).
- State agencies, counties, and cities often receive funding in the form of grants directly from the Federal Government, which may also serve as a constraint for setting integrated statewide objectives from the top down or the bottom up.

SISP is conducted but without the benefit of the highest level actors (Table 4), the State Legislatures and the Governors' Offices. Their means for Level of Involvement are significantly lower than those for the CIOs, the Central IT Offices, and the Individual State Agencies. SISP is conducted by a small group of actors: the CIOs, the Central IT Offices, and Individual Agencies without the benefit of direction by top executives as specified for SISP models in the private sector [Segars, Grover, and Teng, 1998].

Table 4. Duncan t Test for Differences in Means of Level of Involvement

Duncan Grouping ¹	Mean	N	Actor/Stakeholder
A	4.96	45	CIO
B	4.44	48	Central IT Office
B	4.38	48	Individual Agencies
C	3.73	44	IT Steering Committee
C	3.44	48	Governor's Office
C	3.39	39	Executive Committees
D	2.60	48	IT End-users
E	1.75	47	External Consultants
E	1.60	47	Legislative Committees
E	1.54	48	State Legislature
E	1.35	48	External Vendors
E	1.31	48	Citizens

A visual inspection of the means in Table 4 above shows a high degree of similarity for key IT management functions for some of the actors. We would expect to see significant differences in the means because some key management functions are strategic while others are tactical. A Cluster analysis (Table 5) confirms that key management functions can be divided into strategic and tactical groups.

Table 5. Cluster Analysis of Key IT Management Functions

Cluster Variable	Cluster	Closest	Ratio
Cluster 1 (Strategic Functions)			
Make Policy	0.81	0.17	0.23
SISP	0.82	0.31	0.27
Approve Procurement	0.74	0.28	0.36

Cluster 2 (Tactical Functions)			
Design and Develop	0.87	0.22	0.17
Implement	0.88	0.15	0.14
Oversee Implementation	0.69	0.46	0.58

¹ Means with the same letter are not significantly different.

A Cronbach's Coefficient Alpha analysis (Table 6) was conducted to evaluate the degree of independence among the key IT management functions (Table 1) for each group of actors such as the Governors' Offices, the CIOs, and the IT Steering Committees [SAS Procedures Guide, 1988, p. 132]. One would not expect actors with a high level of involvement in Making IT Policy and SISP also to be highly involved in tactical management functions such as Designing and Developing IT Systems, Approving IT Procurement, Implementing IT Systems, and Overseeing the Implementation of IT. Cronbach's Coefficient Alpha scores below 0.8 for each actor given the combination of strategic and tactical key management functions presented for each would be expected.

Rather than actor involvement varying across key functions as expected (Table 6), the Cronbach's Coefficient Alpha scores of .8 rounded up (a conservative level) or better indicate the key IT management functions can be collapsed into one variable which measures overall actor level of involvement in

Table 6. Cronbach's Coefficient Alpha

Actor Involvement in Key IT Management Functions		
Actor/Stakeholder	Raw	Standardized
State Legislature	.77	.81
Legislative Committee	.87	.87
Governor	.78	.78
Executive Committee	.98	.98
CIO	.94	.95
Central IT	.81	.82
IT Steering Committee	.96	.96
State Agencies	.71	.75
End Users	.87	.87
External Consultants	.92	.92
External Vendors	.67	.62
Citizens	.61	.64

(Threshold for single scale = 0.8)

IT Management. If SISP is conducted below the elected official level (as the means in Tables 3 and 4 indicate), the CIOs, Central IT and the Individual Agencies are involved in making policy, and creating the strategic information systems plan.

The high (>0.8 rounded up) Cronbach's Coefficient Alpha scores for the CIOs and Central IT Offices may indicate these actors are involved in both strategic and tactical planning. On the other hand, the high (>0.8 rounded up) Cronbach's Coefficient Alpha scores for the executive or elected levels can be interpreted differently. The high Cronbach's Coefficient Alphas show lack of involvement in IT planning.

A high Cronbach's Coefficient score coupled with high mean scores supports these assumptions. The Individual Agencies are "very involved" with SISP and with most of the tactical planning. Individual State Agencies are reported to be less involved in making policy and approving procurement.

The other actors: the State Legislatures, Legislative Committees, Governors' Offices, Executive Committees, Central IT, IT Steering Committees, End Users, and Consultants also

have high Cronbach's Coefficient Alpha scores (near or above 0.8). However, these high scores are coupled with low means for Level of Involvement in the Key IT Management Functions indicating an overall level of non-involvement. Only State Agencies have high means for Level of Involvement with SISP coupled with a Cronbach's Coefficient Alpha score below 0.8, possibly indicating degree of involvement with the various key management functions varies for the strategic and tactical management functions.

PLANNING HORIZON

Only 15 of the 48 states report their state government-wide information technology planning covers five years or more. The relatively short state planning horizons are consistent with the short budget and election cycles typical of state government. They are not consistent with the longer timeframe associated with established SISP models for the private sector.

"SISP efforts also have a longer time frame than that associated with planning at lower levels within the organizational hierarchy. Strategic IS planners must focus far into the future to insure that adequate technological resources are available to exploit market opportunities or fight off the technological initiatives of competitors." Segars, Grover, and Teng [1998]

STAKEHOLDER INVOLVEMENT

Private sector SISP is focused on the competitive strategic advantage of the organization. Stakeholders engaged in the strategic planning process share the proprietary interests of the organization. Business executives at the strategic level of an organizational structure, lead, and control SISP for their enterprises even though they may gather input for the planning process from the bottom up.

The senior executives at the strategic level of state government do not mirror the pattern of participation in SISP of their counterparts in industry. The governor and the state legislature do not lead and control SISP for most states. Responses to question 9a part 2 concerning level of involvement in developing IT strategic plans, show non-elected career executives, the CIO, Central IT, and State Agencies, are very involved in SISP with N=45, 41, and 40 respectively (Table 7). IT planning in state governments is a career, non-elected, executive function that places planning lower in the hierarchy with respect to strategic decision making; indicating a possible bias in favor of operations rather than policy.

Elected officials at strategic levels of state government are much less involved in SISP. Only one of the state legislatures and state legislative committees were reported as being "Very Involved" in SISP. Less than half of the Governors and Executive Committees are "Very Involved" with N=16 and 23 respectively. Authentic SISP in the private sector by definition [Segars, Grover and Teng, 1998] does not occur at the middle levels of an organizational hierarchy. From analysis of the data, we know planning in the public sector does occur at the middle levels of state government.

STATE IT PERFORMANCE GRADES AND SISP

Criteria used by Syracuse University to rate IT performance based on GPP data (Appendix II) address aspects of IT considered critical to performance of public organizations. State IT grades shown in Table 2 vary from high to low (A through D). IT planning is one of the criteria for assigning grades. Responses to GPP Survey item 10a:

"Does your state have a statewide information technology strategic plan?"

do not vary. All respondents reported either having a statewide IT strategic plan in place or in progress (Table 8).

Table 7. Frequency Table For Stakeholder Involvement in Developing the IT Strategic Plan (Appendix I, Questionnaire Item 9.2)

State Government Stakeholders and IT Planning by State			
N=48 Actor/ Stakeholder	Not Involved (Rated 1 or 2)	Neutral (Rated 3)	Very Involved (Rated 4 or 5)
State Legislature	41	6	1
Legislative Committee	40	6	1
Governor	13	9	26
Executive Committee	11	6	23
CIO	0	0	45
Central IT	3	4	41
IT Steering Committee	6	11	28
State Agencies	2	6	40
End Users	22	17	9
External Consultants	40	6	1
External Vendors	46	2	0
Citizens	45	0	3

Table 8. States at GPP IT Performance High (Grade of B+ or higher) and Low (C or lower)

Does your state have a statewide information technology strategic plan?				
N= 48	Yes	In Progress	No	Total Number of States
HIGH (GPP Assigned State IT Grade of B+ or higher)	9	0	0	9
MIDDLE (GPP Assigned State IT Grade of B through C)	25	7	0	32
LOW (GPP Assigned State IT Grade of C- or lower)	4	3	0	7
N	38	10	0	48

Nine states received an IT grade of B+ or higher and reported having a statewide IT strategic plan in place. Four of seven states with IT grades of C- or lower reported having a statewide IT strategic plan in place and the other three reported their plan is in progress. The remaining states received grades of B through C inclusive and reported they have a statewide IT plan in place (N=25) or in progress (N=7).

The assigned grades are only slightly related to having a statewide IT strategic plan in place. Thirty-eight states have strategic plans in place but only 9 received grades of B+ or better.

Although the numbers are small and many factors contribute to the overall state IT grade, the data suggest a weak relationship between having a statewide IT strategic plan in place and receiving higher grades for overall performance. The relationship between having a plan in place and grade for overall IT performance is worthy of further investigation.

The realization of “strategic” information and technology planning in states is further called into question by the states’ responses to GPP survey item 10b:

“Is there an Information Technology component to your state’s overall strategic plan?”

Although 48 states report they have a statewide strategic information system plan in place or in progress, only 29 states report their overall Strategic Plan includes an IT component. Ten states report an IT component is “in progress”.

On the other hand, 42 states reported that state agencies have IT components in their agency-level overall strategic plans. This finding further supports the idea that IT planning in state governments happens at lower levels in state hierarchies and focuses on operations rather than policy or strategy.

VI. CONCLUSIONS

It is clear that a difference exists between the private sector and public sector views of SISP. What is identified as SISP by the states occurs more within state agencies than at the policy or strategic level for the state as a whole. The pattern of involvement of various actors in state government shows an operational (tactical) as opposed to a policy or strategic planning bias. Specifically, of the 48 states responding:

- 47 State legislatures, and Legislative Committees from 46 states are not involved in SISP,
- 22 Governors’ Offices report they are “not very involved” in SISP, and
- CIOs from 45 states, Central IT from 41 states, and State Agencies from 40 states report being “very involved” in SISP.

The data is consistent with findings in other research [Caudle, Gorr, and Newcomer, 1991]. Caudle, Gorr, and Newcomer [1991] found that middle managers are the ones looking ahead by placing more significance on IS research and development and new uses of data. Bozeman and Bretschneider [1986] suggested that the highest level of SISP should be below the level of politically elected or appointed officials in order to obtain the longest range planning horizon possible for government.

The public sector relies on career managers in the middle of the hierarchy to do strategic planning whereas the private sector relies on executives at the top to provide direction for strategic planning, even though input is gathered from those lower in the hierarchy.

Results of this study support the idea that differences in environment and circumstances between the sectors change the nature of SISP in the public sector. The implications are that sector (public vs. private) is a variable that should be taken into account in research and practice.

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REFERENCES

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Abney, G. and T. P. Lauth (1986) *The Politics of State and City Administration*, Albany: State University of New York Press.

Allison, G.T. (1979) "Public and Private Management: Are Fundamentally Alike in All Unimportant Respects", Proceedings for the Nov 19-20, Public management Research Conference at the Brookings Institution in Washington, C. Proceedings published by the U.S. Office of Personnel Management, 1980, Washington, DC.

Balutis, A. P. and P. J. Kiviat (1997) "Best IT Practices in the Federal Government", CIO Council, <http://www.cio.gov/docs/iac.htm>

Bajjaly, S. T. (1999) "Managing Emerging Information Systems in the Public Sector", *Public Productivity and Management Review*, 23(1), 40-47.

Boar, B. (2001) *The Art of Strategic Planning for Information Technology*, 2d Ed. NY: John Wiley and Sons, Inc.

Bozeman, B. and S. Bretschneider (1986, November) "Public Management Information Systems: Theory and Prescription", *Public Administration Review*, 40, 475-487.

Bretschneider, S. (1990) "Management Information Systems in Public and Private Organizations: An Empirical Test", *Public Administration Review*, 50:5, 536-545.

Bryson, J. M, and F. K. Alston (1996) *Creating and Implementing Your Strategic Plan: A Workbook for Public and Nonprofit Organizations*, San Francisco: Jossey-Bass Publishers.

Bryson, J. M. (1995) *Strategic Planning for Public and Nonprofit Organizations: A Guide to Strengthening and Sustaining Organizational Achievement*, Revised Edition, San Francisco: Jossey-Bass Publishers.

Caudle, S. L., W. L. Gorr, and K. E. Newcomer (1991) "Key Information Systems Management Issues for the Public Sector", *MIS Quarterly*, 15:2(June) 171-188.

Caudle, S. L. (1996) "Strategic Information Resources Management: Fundamental Practices", *Government Information Quarterly*, 13(1), 83-97.

Commonwealth of Pennsylvania Web Pages. (April, 2001). <http://governing.com/gpp/gp1pa.htm>.

Dawes, S. S., et al. (1997) "Partners in State-local Information Systems: Lessons from the Field", Albany, NY: Center for Technology in Government, <http://www.ctg.albany.edu>.

Doherty, N. F., C. G Marples, and A. Suhaimi (1999) "The Relative Success of Alternative Approaches to Strategic Information Systems Planning: An Empirical Analysis", *Journal of Strategic Information Systems*, 8(30) 263-283.

Estabrooks, M. (1995) *Electronic Technology, Corporate Strategy, and World transformation*, Westport, Ct and London: Quorum Books.

Fesler, J. W. and D. F. Kettl (1991). *The Politics of the Administrative Process*, NJ: Chatham House Publishers.

Guy, M. E. (2000) "Public Management" in J. M. Shafritz (ed.) *Defining Public Administration*, Boulder, CO: Westview Press, 166-168.

Government Performance Project State Survey (2001) A. K. Campbell, Public Affairs Institute, Maxwell School of Citizenship and Public Affairs, Syracuse NY: Syracuse University.

Henry, N. (2001) *Public Administration and Public Affairs*, 8th ed., New Jersey: Prentice Hall.

Janz, B. D. and J. C. Wetherbe (1994) "Self-directed Work Teams in IS : insights Gained from a Multi-Method Approach", Minneapolis : Management Information Systems Research Center, Curtis L. Carlson School of Management, University of Minnesota.

Lederer, A. L. and V. Sethi (1998, Sept.). "The Implementation of Strategic Information Systems Planning", *MIS Quarterly*, 445-461.

Lederer, A. L. and V. Sethi, (1996, summer) "Key Prescriptions for Strategic Information Systems Planning", *Journal of Management Information Systems*, Vol 13, No.1, 35-62.

Lee, M. (2001, May) "The Missing Link: State Profiles of the Chief Technology Officer", Learning Paper Series, Government Performance Project, A. K. Campbell, Public Affairs Institute, Maxwell School of Citizenship and Public Affairs, Syracuse, NY: Syracuse University.

McClure, D. (2001) "Maximizing the Success of Chief Information Officer: Learning from Leading Organizations", *GAO-01-376G CIO Executive Guide*, U.S. Washington, DC: General Accounting Office,

National Commission on the Public Service Leadership for America: Rebuilding the Public Service (1990), MA: Lexington Books.

National Commission on the State and Local Public Service (1993) *Revitalizing State and Local Public Service: Strengthening Performance, Accountability, and Citizen Confidence*, F. J. Thompson (ed), San Francisco: Jossey-Bass.

Neiderman, et al. (1991) "Information Systems Management Issues for the 1990s", *MIS Quarterly*, 15 (4), 475-500.

Newcomer, K E., and S. L. Caudle (1991) "Evaluating Public Sector Information Systems: More Than Meets the Eye." *Public Administration Review*, 51(5), 377-384.

Robinson, P. (1959) *Tests of Significance for Use in Comparisons of Several Means, with Particular Reference to Duncan's Multiple Range Test*, Ottawa : Canada Dept. of Agriculture, Statistics Research Service.

Rocheleau, B. (2000). "Prescriptions for Public-sector Information Management: A Review, Analysis, and Critique", *American Review of Public Administration*, 30(4), 414-435.

Rocheleau, B. and L. Wu, (2002) "Public vs. Private Information Systems: Do They Differ in Important ways? A Review and Empirical Test", *American Review of Public Administration*, Forthcoming.

Sabherwal, R. (1999, Winter) "The Relationship between Information System Planning Sophistication and Information System Success: an Empirical Success", *Decision Sciences*, 30 (1), 137-167.

Sabherwal, R. and W. R. King (1995) "An Empirical Taxonomy of the Decision Making Processes Concerning Strategic Applications of information Systems", *Journal of Management Information Systems*, 11(1), 177-214.

SAS Procedures Guide (1988) Release 6.03 Edition, SAS Institute, Inc. Cary:NC.

SAS/Stat. User's Guide, (1999) Version 8, Vol. 1, SAS Institute, Inc. Cary:NC.

Segars, A. H., V. Grover, and J. T. C. Teng (1998, Spring) "Strategic Information Systems Planning: Planning System Dimensions, Internal Coalignment, and Implications for Planning Effectiveness", *Decision Sciences*, 29(2), 303-245.

Ward, J. M. and P. M. Griffiths (1996) *Strategic Planning for Information Systems, 2nd Ed.*, Chichester, UK: John Wiley and Sons.

Wood, B. D. and R. W. Waterman (1994) *Bureaucratic Dynamics: The Role of Bureaucracy in a Democracy*. Boulder, CO: Westview Press.

APPENDIX I. GPP QUESTIONNAIRE ITEMS ANALYZED FOR THIS RESEARCH

QUESTION 9

We would like to understand the relative level of involvement of the various actors who perform key information technology management functions in your state. 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, 2000, pg. 16.)

Subjects were asked to "rank" the level of participation (from 1 to 5) for each cell in the matrix following. 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*.

	1. Making Policy about design and use of IT systems	2. Developing IT Strategic Plans	3. Designing and developing IT Systems and Projects	4. Approving the procurement of IT Systems and Hardware	5. Overseeing the implementation of IT Systems, and Projects	6. Overseeing the implementation of IT?
a.State Legislature	V1	V2	V3	V4	V5	V6
b.Legislative committee(s)	V7	V8	V9	V10	V11	V12
c.Governor's office	V13	V14	V15	V16	V17	V18
d.Executive committee	V19	V20	V21	V22	V23	V24
e.Chief Information Officer	V25	V26	V27	V28	V29	V30
f.Central IT office	V31	V32	V33	V34	V35	V36
g. IT steering committee	V37	V38	V39	V40	V41	V42
h.Individual state agencies	V43	V44	V45	V46	V47	V48
i. IT end-users	V49	V50	V51	V52	V53	V54
j.External consultants	V55	V56	V57	V58	V59	V60
k.External vendors	V61	V62	V63	V64	V65	V66
l. Citizens	V67	V68	V69	V70	V71	V72

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

QUESTION 10 (V INDICATES VARIABLE):

Please answer the following questions about information technology planning:

a. Does your state have a statewide information technology strategic plan?

- V 73 If yes
- V 74 How many years does it cover? (*fill in blank*)
- V 75 When was it last *formally revised*? (*fill in blank*, MM/YY)
- V 76 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 77 A vision statement
- V 78 A mission statement
- V 79 Specific core values
- V 80 Specific long-term goals (beyond 1 year)
- V 81 Specific short-term objectives (1 year or less)
- V 82 Specific performance measures for each goal
- V 83 Specific performance measures for each objective
- V 84 Specific benchmarks for each goal
- V 85 Specific benchmarks for each objective
- V 86 Clear assignment of responsibility for achievement of each objective
- V 87 Discussion of action plans designed to achieve each objective
- V 88 Discussion of key external factors that may affect achievement of each

- objective
- V 89 Discussion of resources required to achieve each objective
- V 90 Discussion of how input from external stakeholders was included in the plan.
- V 91 Other components (*Please specify ...*)
- b. V 92 Is there an information technology component to your state's overall strategic plan? (No, Yes, or In progress)
- c. V 93 What proportion of individual state agencies have information technology strategic plans in place? (All, Most, About half, Less than half, None)
- d. V 94 If individual state agencies have overall strategic plans, is there an information technology component to them? (No, Yes, In progress)
- e. V 95 Please describe the information technology planning process in your state. (*Open ended request.*)
- f. V 96 Please explain how feedback from front-line managers and end-users is incorporated into information technology plans. (*Open ended request.*)
- V 97 State Grade for Overall IT Performance²

APPENDIX II. GPP 2000 INFORMATION TECHNOLOGY CRITERIA FOR EVALUATION³

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 is comprised of elements, which further describe the main category or criterion. These criteria are listed below.

Criterion 1: Architecture

- Appropriate mix of centralized and decentralized hardware and software systems for consistency of capacity across the state government in support of key functions such as human resources management and financial management
- Quality and level of integration across various management systems that included timely access to information
- Standardization of hardware and software systems across state 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 state 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 state 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 in the design, improvement and implementation of State IT systems
- Quality and design of management systems that track implementation and resolve problems associated with implementation of IT systems.

² Variable added by the authors from Government Performance Project State Survey. [2000]

³ Source: Government Performance Project [2000]

- The integration of telecommunications with other IT and state management systems
- Criterion 3: Planning
- The completeness and comprehensiveness of the state's strategic plan
 - The frequency by which that plan is reviewed and revised
 - The level to which IT components are included in that state-wide strategic plan
 - The level of IT planning that occurs state-wide 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 support state 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 local, state and federal agencies
 - Quality of the transmission and receipt of information to school districts and non-governmental agencies
 - Quality of Geographic Information System and its ability to support state agencies and their efforts to serve citizens
- Criterion 5 Cost/Benefit Analysis
- Capacity of state government to evaluate and validate the extent to which IT system benefits justify their costs
 - Level of evaluation of both monetary and non-monetary 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 state government to procure the IT systems needed in 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 develop of request for proposals and length to award
 - Use of master contracts and the time from development to length of 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

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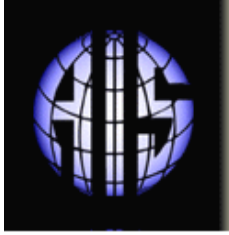
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