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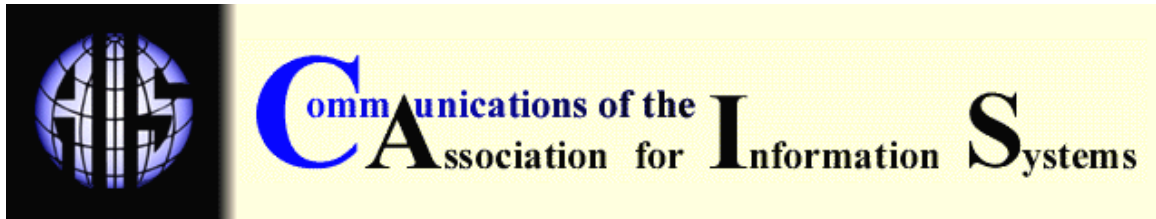
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STRATEGIC INFORMATION SYSTEMS PLANNING AND U.S. COUNTY GOVERNMENT

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ABSTRACT

This article presents the second in a series of public sector studies conducted by Syracuse University in cooperation with the University of Nebraska at Omaha. The research reported here investigates Strategic Information Systems Planning (SISP) at the county level. The first study [Dufner, Holley, and Reed, 2002] described SISP at the state level. Because the questionnaire and research methodologies are almost identical, this study of countywide SISP closely follows the format of the SISP study conducted at the state level. The entire series of SISP studies is based on data from the Government Performance Project (GPP) survey of U.S. governments (state, county, and city) conducted by Syracuse University from 1998 through 2002. The findings for counties mirror those for states, and indicate an absence of SISP.

Keywords: strategic information systems planning, SISP, countywide strategic planning, county government, strategic information systems planning models, information technology planning.

I. INTRODUCTION

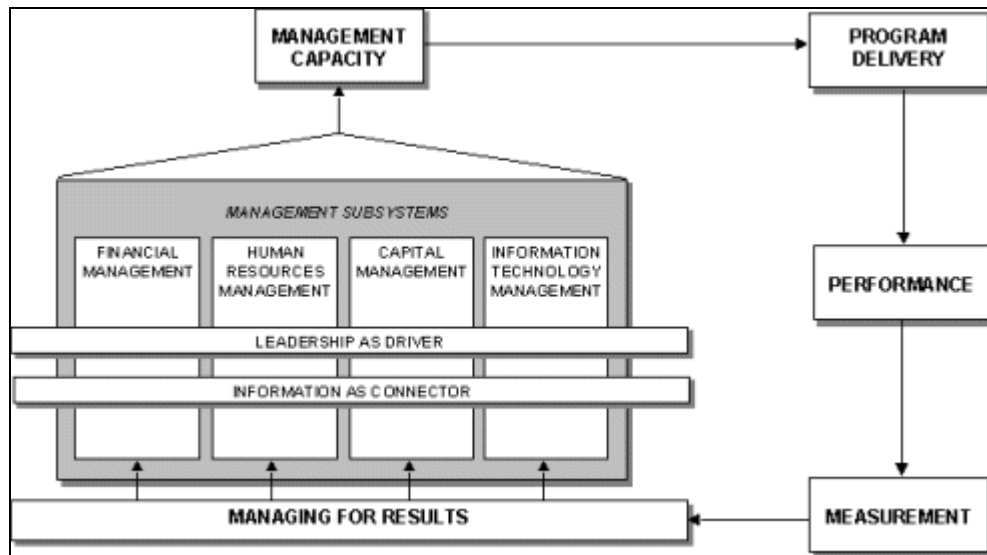
THE GPP MODEL OF GOVERNMENT PERFORMANCE

This study involves an exploration of how and whether county governments use Strategic Information Systems Planning. The study is based on the GPP model (Figure 1) developed at Syracuse University. The model shows the importance of IT to achieving the missions and objectives of government. IT is depicted as one of the four pillars of management capacity. In the private sector, this phenomenon is acknowledged by including IT at the strategic level through a process of Strategic Information Systems Planning (SISP).

SISP IN THE PUBLIC SECTOR

In a special issue of the *Public Administration Review*, Bozeman and Bretschneider [1986] called attention to the need for research to guide public sector information systems development and public sector technology practice. However, applicability of private sector models for SISP to the public sector is controversial. A review of the empirical research shows important sectoral

differences [Rocheleau and Wu, 2002]. For example, economic considerations, while present, are less dominant in the public sector. IT is also placed lower in the hierarchies of public



Source: GPP Model (1996) The Maxwell School, Campbell Public Affairs Institute
<http://www.maxwell.syr.edu/gpp/about/goals.asp>

Figure 1. The GPP Model of Government Performance

SIDEBAR 1 HISTORICAL BACKGROUND OF STUDY

The Maxwell School of Citizenship and Public Affairs of Syracuse University with funding from The Pew Charitable Trusts conducted a seminal study of government performance in the United States (Figure 1). The Government Performance Project (GPP), administered by the Maxwell School's Alan K. Campbell Public Affairs Institute evaluated the management capacity and performance of local and state governments. The project was initiated in 1996 and was administered by Syracuse University. The uncoded questionnaires were made available by the GPP for research. The focus of the first paper in this series was state information technology planning [Dufner, Holley, and Reed, 2002; Holley, Dufner, and Reed, 2002]. The present study, the second in the series, is based on analysis of the GPP raw data for Information Technology Planning gathered in the 40 largest U.S. counties selected based on revenue.

organizations than in private sector organizations [Holley, Dufner, and Reed, 2002; Bretschneider, 1990; Caudle, 1996; Caudle, Gorr, and Newcomer, 1991].

Conditions considered necessary for SISP in the private sector are described in the business literature. Consistent with previous theoretical work, an empirical study of private sector firms conducted by Segars, Grover, and Teng [1998] found successful SISP is associated with:

- a high degree of economic rationality,

- continuous planning processes,
- direction by top executives, and
- engagement of functional and operational department heads.

THE ROLE OF COUNTIES

County governance differs from the management structure associated with the model of Strategic Planning established in the private sector. These differences may make the model unrealizable for county governments. Among these differences are:

Number of CEOs

- Private Sector 1
- Counties n (a number of elected officials unless one elected county official)

Level in organization

- Private Sector The management structure implicit in the SISP model requires effective top down control. Executives of the subsidiaries of large firms must follow the dictates from headquarters. In the SISP model, management takes informed account of the capacity of the organization during the planning process [Segars, Grover, and Teng, 1998]. In practice, however, some subsidiaries may be required to absorb the larger firm's overhead and pay fixed sums to headquarters irrespective of income.
- County Counties can be considered subsidiaries of the state. States control the mechanisms by which their counties collect revenues and impose on counties many responsibilities or "mandates" [Coppa, 2000]. Counties have significant independent funding streams from federal and other grants and are subject to the occasional dictates from citizens through initiatives and referenda. States do not have comprehensive top down control. Counties often do not receive funding for implementation of the strategic objectives that are identified at the federal or state level to be implemented by counties [Coppa, 2000; Barrett, Greene and Mariani, 2001, 2002; Cigler, 1998].

Control

- Private Sector Hierarchical from CEO down. Departments follow company policy. Provide input to planning but also must carry out what senior management decides.
- Counties Elected officials serve as board of directors. Departments are loosely coupled and operate within very broad mandates. This structure tends to distance functional and operational department heads from county level decision processes, and results in the fragmentation of countywide planning efforts.

Continuity

- Private sector The management structure required by the SISP model is stable and long-term, which is conducive to planning.

Allison's list of differences [1986] further describes the gap between private and public sector organizations. Government agencies operate within a different "time perspective", "Governments go on forever" and performance is measured by the "bottom line". The economic focus of the private sector becomes a focus on equity in government. Pressures from organizations and "public processes" such as the media, press, legislative and judicial decisions result in a "fragmented structure of control and authority".

The differences cited by Guy and Allison can be expected to impede successful adoption of private sector SISP models in the public sector. In addition, diverse interests drive public entities; the unifying economic goals important for private sector SISP, either are non-existent or are much weaker for public entities.

SISP AND SETTING ORGANIZATIONAL OBJECTIVES

Today, IT planning must be weighed as a part of the process of establishing strategic objectives by converting simple IT planning to SISP and all that the model implies. [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 an organization.

In county government as in state government, strategic objectives are selected through a process of political discourse and compromise among a wide variety of external and internal interest groups typically with diverse needs and goals [Dufner, Holley, and Reed, 2002; Guy, 2000; Rocheleau, 2000; Allison, 1986]. IT issues often are not considered in the process of establishing county objectives. The objectives of county government are expressed as county ordinances, or mandates from state or federal government that county government must implement. In the business world, the processes of setting objectives and carrying them out are closely integrated; while in government these processes are loosely coupled [Holley, Dufner, and Reed, 2002; Rocheleau, 2000]. The structure of government impedes consideration of operational issues at the time objectives are established.

For example, an objective might be expressed as a mandate that no citizen should be on the welfare rolls for longer than two years, or as a mandate that public transportation should be accessible to handicapped citizens [Coppa, 2000; Fletcher, Bretschneider, and Marchand, 1992; Caudle, Gorr, and Newcomer, 1991]. At the time elected officials 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 relevant budget allocations are integrated and tightly coupled.

The government separation between setting and carrying out objectives, although imperfect, is supported by extensive research and scholarship [Henry, 2001; Wood and Waterman, 1994; Fesler and Kettl, 1991; Abney and Lauth, 1986]. However, the separation of setting objectives and planning implementation, to the extent it exists, precludes "strategic" information and technology planning. In county governments, the county CIO or equivalent IT expertise may not be consulted to provide the information necessary for creating an integrated and feasible SISP linked to the achievement of strategic objectives expressed as county ordinances or mandates¹.

THE PLANNING HORIZON

Studies show that national and state government officials 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]. A long-term focus is regarded as essential to "strategic" information systems and technology planning [Segars, Grover, and Teng, 1998].

Such a focus may not be within reach of government strategic decision makers. In government, objectives are set by elected or appointed officials who are responding to the dictates of short

¹ In practice, exclusion of the CIO from SISP also occurs in industry, particularly if the CIO is not at the decision level in a firm.

election and budget cycles, which lead to compressed planning horizons [Guy, 2000; Caudle, Gorr, and Newcomer, 1991; Allison, 1986].

Bajjal's [1999] nationwide study found the focus of long-term objectives communicated to state information resource managers was exclusively budgetary and operational efficiency. Budgetary and operational efficiency are not strategic objectives. Given these realities, a limited planning horizon would be an expected consequence of the rapid turnover of elected officials at the executive, i.e., strategic level.

STAKEHOLDER INVOLVEMENT

Stakeholders charged with SISP in the private sector are internal to the organization or share the common goal of long-term profitability of the enterprise. Even the few external stakeholders, such as vendors, are interested in the long-term profitability and survival of the organization [Lederer and Sedhi, 1998; Sabherwal and King, 1995].

In county and state governments, many stakeholders are involved in setting strategic IT objectives. Stakeholders are both internal and external to the government organization. Internal stakeholders include but are not limited to executive and legislative officials, governmental employees, and employee unions [Guy, 2000; Allison, 1986]. External stakeholders include but are not limited to technology vendors, special interest groups, and the individual citizens [Dawes, et al., 1997].

In government, internal and external stakeholder goals and objectives often are in conflict. For example, external stakeholders may include both pro-growth and pro-historical preservation interests. Internal stakeholders may include elected officials with short-term political interests and career employees with long-term bureaucratic interests.

Despite disparity of interests and the frequent lack of a compelling shared goal, the public nature of U.S. governments provides every stakeholder some claim to participation. Unless large numbers of internal and external stakeholders are engaged in the public planning process, disgruntled stakeholders can become obstacles to implementation [Bryson and Alston, 1996; Bryson, 1995; Newcomer and Caudle, 1991]. Although important to ultimate success, a democratic planning process can be expected to impede the coherence and timeliness of planning.

III. RESEARCH QUESTIONS

This study is focused on SISP at the countywide government level. It asks:

- To what extent is SISP carried out by county governments?
- If SISP is carried out, to what extent, if any, does it differ from standards for private sector SISP suggested by the literature?
- To what extent does SISP at the county government level differ from SISP at the state level?

IV. METHODOLOGY

The analysis presented and discussed here is based on data from the Government Performance Project (GPP) survey of U.S. county governments conducted by Syracuse University in 2001. The data were made available for analysis in 2002 [Government Performance Project County Survey, 2001]. Only two questions, 12 and 13 (Appendix I), from the survey data were analyzed for this study. Responses to the two questions describe the SISP function and roles played by different actors (stakeholders) such as elected officials, executive and legislative committees, county employees, citizens and vendors at the county level. The responses to the two questions depict SISP in relationship to management.

Question 12 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.

Question 13 asked respondents to describe SISP in their county government. Although the data presented here represents only two questions from the questionnaire, 100 variables are involved

(Appendix I). The 101st variable in the study is the county grade for overall IT performance assigned by expert GPP judges (Table 2).

Table 1. Key IT Management Functions (Question 12)

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.

The overall grade assigned to each county was based on information from the questionnaires returned and through interviews conducted by journalists from *Governing Magazine*. Information was also gathered from a variety of public sources such as state web sites or publications. All 40 counties were assigned an overall grade for it performance, although only 38 returned the questionnaire.

Table 2. County Grades for Information Technology

County	State	Information Technology Grade	County	State	Information Technology Grade
Alameda	CA	B	Maricopa	AZ	A
Allegheny	PA	D	Mecklenburg	NC	B
Anne Arundel	MD	B	Miami-Dade	FL	D+
Baltimore	MD	A-	Milwaukee	WI	B-
Broward	FL	C+	Monroe	NY	D
Clark	NV	C	Montgomery	MD	B-
Contra Costa	CA	B-	Nassau	NY	D+
Cook	IL	B-	Oakland	MI	A-
Cuyahoga	OH	D+	Orange	CA	A-
Dallas	TX	B-	Palm Beach	FL	C-
Erie	NY	B	Prince George's	MD	B+
Fairfax	VA	A	Riverside	CA	C
Franklin	OH	C+	Sacramento	CA	C+
Fulton	GA	C-	San Bernardino	ca	D+
Hamilton	OH	C+	San Diego	CA	B+
Harris	TX	C+	Santa Clara	CA	D+
Hennepin	MN	B+	Shelby	TN	B-
Hillsborough	FL	C-	Suffolk	NY	C
King	WA	C-	Wayne	MI	B-
Los Angeles	CA	C-	Westchester	NY	B-

Source: Government Performance Project [March, 2001]

Note: Erie and San Bernardino Counties did not return questionnaires but were assigned grades by the expert panels

SAMPLE STUDIED

Questionnaires were distributed by the Maxwell School of Citizenship and Public Affairs at Syracuse University to the 40 largest counties selected based on revenue and region rather than population. Governments with a large revenue were assumed to be able to provide a wide range of functions and services. Population alone was not used to identify the largest counties because

many counties with large populations provide minimal services, particularly in the Northeast (Government Performance Project County Survey, 2001).

Thirty-eight of the forty questionnaires were returned. Two counties, Erie, NY and San Bernardino, CA did not return questionnaires. All 40 counties were assigned grades by the GPP judges. The grades for Erie and San Bernardino are based only on publicly available information.

Table 3 shows the variety of officials completing the questionnaires. Only fifteen of the thirty-eight returned questionnaires were completed by the county CIO.

Table 3. Responders for the Information Technology Portion of the GPP Questionnaire

County	Responder	County	Responder
Alameda	IT Dept. Director	Maricopa	IT Consultant
Allegheny	Deputy CIO	Mecklenburg	Director of IST
Anne Arundel	Information Services Manager	Miami-Dade	CIO's Senior IT Planner
Baltimore	IT Office Director	Milwaukee	Information Management Services Division Manager
Broward	CIO	Monroe	CIO
Clark	CIO	Montgomery	CIO
Contra Costa	CIO	Nassau	Director of Data Processing
Cook	CIO	Oakland	Supervisor Project Management Office
Cuyahoga	County Administrator	Orange	Assistant CEO/Information and Technology CIO
Dallas	CIO	Palm Beach	Director of ISS
Fairfax	CIO	Prince George	Director of Information Technology and Communications
Franklin	CIO	Riverside	CIO
Fulton	CIO	Sacramento	IT Division Chief
Hamilton	Senior Assistant County Administrator	San Diego	Assistant Chief Technology Officer
Harris	Managing Director	Santa Clara	CIO
Hennepin	CIO	Shelby	Administrator
Hillsborough	Director of Information and Technology	Suffolk	Director MIS
King	IT Manager	Wayne	Applications Division Director
Los Angeles	CIO	Westchester	CIO

THE SURVEY INSTRUMENT

The questionnaire used to gather the county data is a version of the GPP questionnaire used to collect data from the states [Dufner, Holley, and Reed, 2002]. The state version of the questionnaire was modified to use the vocabulary of county governance for administration to the counties selected.

The questionnaire contained a combination of open-ended and closed-ended questions. As with the states, some of the counties treated the "Likert-like" scales or closed-ended questions as an opportunity to provide additional detail [Dufner, Holley, and Reed, 2002].

The GPP survey evaluated the performance of county governments in the following five specific areas:

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

This study is focused exclusively on one specific area of the GPP survey, IT management.

DATA ANALYSIS

Data analysis consisted of coding the rather complex responses of the counties, and then conducting both a qualitative and quantitative analysis of the data. SAS [SAS/STAT, 1999; Miller, 1996] was used to perform the data analyses to obtain means, frequencies, the Duncan t test for differences in means, the cluster analysis, and the Cronbach Coefficient Alpha analyses.

The data analysis for this study covers the 38 responders. The county grades were used in the analysis only as a proxy for IT performance.

The data were evaluated to determine the extent to which county governments perform SISP. County responses (i.e. their self descriptions on GPP survey dimensions) were compared with dimensions of the SISP construct (Section II). The findings are presented and discussed in Section V.

In addition to evaluating responses against the SISP construct, patterns of responses also were compared with the IT grades for each county. The strategic potential or importance of IT to organization success is well recognized [Sabherwal, 1999; Segars, Grover, and Teng, 1998]. The literature suggests that counties conducting SISP would have better IT outcomes and higher GPP grades for overall IT performance.

V. FINDINGS

The discussion and presentation of the findings is organized to reflect the SISP construct described in Section II:

- setting organizational objectives,
- planning horizon, and
- stakeholder involvement.

SETTING ORGANIZATIONAL OBJECTIVES

For many organizations IT is integral to achieving strategic organization goals and objectives [Sabherwal, 1999]. Organizational objectives are established at the strategic or highest levels of organizations [Boar, 2001; Segars, Grover, and Teng, 1998; Ward and Griffiths, 1996].

The GPP survey contains questions about both strategic and tactical key management functions (Table 1) used to evaluate an actor's level of involvement. Established models of SISP dictate top-level executive involvement in the strategic key Management Functions listed on the GPP survey: Making IT policy; Strategic Information Systems Planning; and Approving IT procurement. On the other hand, top-level executive involvement is expected to be low for the tactical key management functions: Designing and developing IT systems; Implementing IT systems; and Overseeing implementation [Boar, 2001; Segars, Grover, and Teng, 1998; Ward and Griffiths, 1996].

Counterparts to top-level executives in the private sector are the elected officials in the executive branch of county government. These people include the County Board, Council, Commission members, Legislative Committees and any Chief elected official [Coppa, 2000]. Private sector strategic IT planning models predict that SISP is performed at the highest executive levels. Applied to the public sector, these models predict that SISP would be a part of county executive objective setting performed by the County Board, Council, Commission members, Legislative Committees and any Chief elected official.

To determine whether a private sector SISP model applies to county government, mean levels of involvement of the Actors/Stakeholders for key management functions were examined (Table 4). The findings do not reflect the levels of involvement one would expect to see for a private sector SISP model.

Although their degree of involvement is higher for strategic IT functions than for tactical functions, the involvement of actor/stakeholders at the executive, elected level of county government is lower than expected for conformity with the SISP model.

Levels of involvement for county elected executives in the key strategic IT management functions of Making IT Policy, SISP, and Approving IT Procurement are as follows:

- County board, council or commission (means = 2.54, 2.05, 3.27)²;
- Legislative committees (means = 1.93, 1.66, 2.03); and
- Chief elected official (means = 2.80, 2.43, 3.33).

The means are in the expected direction; however, the low mean levels of involvement show little to no involvement in SISP for these actors.

Comparing the county levels of involvement to state levels of involvement shows a similar pattern of non-involvement at the level of elected officials. The mean levels of involvement for the Governors' Offices in Making IT Policy and SISP, while higher than their counter-parts at the county level, are below the range of 4-5 (*very involved*) that one would expect given SISP models for the private sector. The mean levels of involvement for the Governors' Offices, Legislative Committees, and State Legislatures in Making IT Policy, Strategic Information Systems Planning (SISP) and Approving Procurement are as follows:

- State Legislatures (means =2.29, 1.54, 2.2);
- State Legislative Committees (means =2.23, 1.60, 2.19); and
- Governors' Offices (means =3.48, 3.44, 2.52).

The State Legislatures and Legislative Committees mean levels of involvement are also in the *not involved* range (below 3) seen at the county level [Dufner, Holley, and Reed, 2002].

The other actors at both the state and county show relatively low levels of involvement in strategic functions with the exception of the CIOs and Central IT Offices. The standard deviations for most actors and functions are relatively large (>1) indicating a high degree of variance among the counties and among the states.

The means and standard deviations at the county level (Table 4) indicate that Information Technology strategic planning is conducted at levels below the executive and legislative elected officials. Levels of involvement are higher for expert career or appointed IT officials for the key strategic management functions Making IT Policy, Strategic Information Systems Planning (SISP) and Approving Procurement:

County

- CIOs (means = 4.63, 4.88, 4.56), and
- Central County IT Offices (means = 3.95; 4.24, 3.92),

State

- CIOs (means = 4.93, 4.96, 4.44), and
- Central State IT Offices (means = 4.33, 4.44, 4.28).

² The scale runs from 1=not involved to 5=very involved

Table 4. Mean and Standard Deviations for Level of Involvement of Actors in Key IT Management Functions

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
County board, council, or commission	2.54	1.43	2.05	1.22	1.32	0.71	3.27	1.48	1.22	0.53	1.68	0.97
Legislative committee(s)	1.93	1.14	1.66	0.94	1.35	0.81	2.03	1.52	1.17	0.54	1.34	0.81
Chief elected official	2.80	1.4	2.43	1.25	1.4	1.00	3.33	1.60	1.63	1.13	2.03	1.40
Chief administrative officer	3.21	1.23	2.78	1.11	1.62	0.79	3.19	1.35	1.51	0.83	2.22	1.08
Executive committees	3.11	1.34	2.96	1.29	1.96	1.17	2.46	1.32	1.57	0.88	2.39	1.47
CIO	4.63	1.07	4.88	0.42	3.81	1.20	4.56	0.95	3.69	1.20	4.41	1.01
Central county IT office	3.95	1.45	4.24	1.26	4.50	1.33	3.92	1.30	4.53	1.03	4.45	1.06
IT steering committee	3.55	1.31	3.52	1.31	2.94	1.34	3.03	1.49	2.71	1.40	3.26	1.41
Individual departments	2.84	1.29	3.40	1.29	3.66	1.32	3.07	1.30	3.84	1.29	3.71	1.27
IT end-users	1.79	1.04	1.95	1.06	2.53	1.22	1.63	1.03	3.08	1.34	2.29	1.38
External consultants	1.74	1.03	2.29	1.09	3.03	0.97	1.29	0.69	3.11	1.09	2.21	1.02
External vendors	1.21	0.62	1.50	0.83	2.71	1.27	1.29	0.77	3.00	1.21	1.92	1.08
Citizens	1.29	0.52	1.45	0.72	1.32	0.81	1.16	0.55	1.08	0.36	1.08	0.27

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

The mean levels of involvement of all actors indicate that strategic functions such as planning and setting policy are conducted below the strategic level (elected executive and legislative officials) of state and county governments. [Segars, Grover, and Teng, 1998].

Comparison of county and state³ mean levels of involvement shows a similar pattern of deviation from private sector SISP models (Table 5). Neither state nor county governments exhibit the high levels of executive involvement that one would expect. In government the roles of executives and administrators are reversed, with middle level administrators reporting more involvement in key IT strategic management functions such as making policy and SISP (Table 5). State and County

³ For a complete set of state means see Dufner, Holley, and Reed, 2002.

governments differ primarily in the level of intensity of involvement across actors rather than in the pattern of involvement.

Table 5. Mean Level of Involvement in Key County IT Management Functions

County				State			
Actor/ Stakeholder	Making IT Policy	SISP	Approving Procurement	Actor/ Stakeholder	Making IT Policy	SISP	Approving Procurement
Executive Level (elected officials)							
County Board, Council, or Commission	2.54	2.05	3.27	State Legislature	2.29	1.54	2.20
Legislative Committees	1.93	1.66	2.03	Legislative Committees	2.23	1.60	2.19
Chief Elected Official	2.80	2.43	3.33	Governor's Office	3.48	3.44	2.52
Executive Committees	3.11	2.96	2.46	Executive Committee	3.30	3.38	2.38
Administrative (non-elected)							
CIO	4.63	4.88	4.56	CIO	4.93	4.96	4.44
Central County IT Office	3.95	4.24	3.92	Central State IT Office	4.33	4.44	4.28
Individual Departments	2.84	3.40	3.07	Individual Agencies	3.56	4.38	3.85

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

The lack of top down strategic planning in both cases may be a result of:

- The roles of middle level administrators are reversed, with middle level administrators reporting more involvement in key IT strategic management functions such as making policy and SISP (Table 5). State and County governments differ primarily in the level of intensity of involvement across actors rather than in the pattern of involvement.
- Loosely integrated structures of government that may preclude the degree of formalization of structures, techniques, written procedures and policies necessary for SISP [Lederer and Sethi, 1996; Sabherwal and King, 1995].
- Specific agencies of state, county, and city government often receive funding in the form of grants directly from the Federal Government, which constrains integration of countywide or statewide objectives.

SISP is conducted by a small group of actors: the CIO, the Central IT Offices, and Individual departments or IT steering committees. These actors are without the benefit of direction by top executives specified for SISP models in the private sector [Segars, Grover, and Teng, 1998].

To determine whether the respondents treat the key management functions (Table 1) as significantly different, a cluster analysis was conducted. Responders grouped the functions into two specific categories, which we labeled Strategic and Tactical (Table 6). The clusters show a clear differentiation between the strategic and tactical functions. A similar cluster pattern was also seen at the state level [Dufner, Holley, and Reed, 2002].

Table 6. Cluster Analysis of Key IT Management Functions

Cluster Variable	Cluster	Closest	Ratio
Cluster 1 (Strategic Functions)			
Making IT Policy	0.8545	0.2611	0.1969
SISP	0.7944	0.3713	0.3271
Approve IT Procurement	0.6546	0.1740	0.4182

Cluster 2 (Tactical Functions)			
Design and Develop IT Systems	0.8467	0.2505	0.2046
Implement IT Systems	0.8700	0.1835	0.1592
Oversee Implementation	0.7904	0.4747	0.3991

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

A Duncan t test (Table 7 and table 8, below) was run to further examine involvement of various actors specifically in SISP. The different letters (Duncan Grouping) show that the differences in the means are statistically significant. The CIO and Central county IT office are very involved with means of 4.88 and 4.24 respectively.

Table 7. County Data: Duncan t test⁴ for Differences in Means for Actors for Level of Involvement in Strategic Planning

Developing IT Strategic Plans (SISP)			
Actor/ Stakeholder	Duncan Grouping	Mean	N
1. County board, council or commission	H, G	2.05	37
2. Legislative Committee(s)	I, H	1.66	29
3. Chief elected official	F, E, G	2.43	30
4. Chief administrative officer	F, E	2.78	37
5. Executive committee(s)	D, E	2.96	28
6. CIO	A	4.88	32
7. Central county IT office	B	4.24	38
8. IT steering committee	C	3.52	31
9. Legislative Committees	D, C	3.39	38
10. Individual departments	H, G	1.94	38
11. External consultants	F, G	2.29	38
12. External vendors	I, H	1.50	38
13. Citizens	I	1.44	38

Scale 1 = not involved to 5 = very involved

Means with the same letter are not significantly different

At the state level a similar pattern is seen; however, another actor, Individual Agencies, is involved in SISP. The CIO, Central IT Office, and Individual Agencies are all very involved in SISP with mean levels of involvement greater than 4. The other actors studied; IT Steering Committee, Governor's Office, Executive Committees, IT End-users, External Consultants,

⁴ The Duncan t tells us that the differences in means are statistically significant.

Legislative Committees, State Legislature, External Vendors and Citizens at the state level all have mean levels of involvement below 4.

Table 8. State Data: Duncan t test⁵ for Differences in Means for Actors for Level of Involvement in Strategic Planning

Developing IT Strategic Plans (SISP)			
Actor/ Stakeholder	Duncan Grouping	Mean	N
1. CIO	A	4.96	45
2. Central state IT office	B	4.44	48
3. Individual agencies	B	4.38	48

Means with the same letter are not significantly different

Visual inspection of the means in Table 4 shows a high degree of similarity for actors across functions. 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, Implementing IT Systems, and Overseeing the Implementation of IT. We would expect Cronbach Coefficient Alpha scores below 0.8 for each actor.

Rather than actor involvement varying across key management functions as expected with high levels of involvement in *either* the strategic or tactical functions, the Cronbach Coefficient Alpha [Miller, 1995] scores of .80⁶ (standardized, rounded) or better for most actors shows the level of involvement is highly correlated (Table 9) across all strategic and tactical functions. The actor is either involved in all functions or not involved. At the state level, a similar finding was observed.

The scores confirm that overall actor level of involvement in all key IT Management functions is correlated across key management functions. Only the Chief administrative officer with means for: Making Policy = 3.21, SISP = 2.78; and Approving procurement = 3.19 coupled with a lower Cronbach Coefficient Alpha score (.68) shows a degree of difference in involvement between the strategic and the tactical functions. The Chief administrative officer's pattern of involvement resembles the SISP model more than any of the other county actors. Levels of involvement are in the expected direction but are too low (well below 4) to be considered very involved.

SISP, for the most part, is conducted below the elected official level (as the means in Table 4 indicate). CIOs and the IT Steering Committees will be involved in making county IT policy, and creating the county strategic information systems plan.

PLANNING HORIZON

Only 5 of the 38 counties compared to 15 of the 48 states [Dufner, Holley, and Reed, 2002] report their government-wide IT planning covers five years or more. Nineteen counties report planning horizons of 3 to 5 years. The relatively short county planning horizons are consistent with the short budget and election cycles typical of government. They are not consistent with the longer timeframe associated with established SISP models for the private sector.

⁵ Statistically significant differences in means are assigned different letters.

⁶ A conservative criterion

"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]

Table 9. Cronbach Coefficient Alpha

Actor Involvement in Key IT Management Functions		
Actor/Stakeholder	Raw	Standardized
County board, council, or commission	0.70	0.75
Legislative committee(s)	0.75	0.80
Chief elected official	0.81	0.82
Chief administrative officer	0.64	0.68
Executive committee(s)	0.84	0.85
CIO	0.82	0.85
Central county IT office	0.91	0.91
IT Steering Committee	0.87	0.87
Individual departments	0.89	0.89
IT end-users	0.85	0.86
External consultants	0.66	0.66
External vendors	0.70	0.67
Citizens	0.52	0.57

(Threshold for single scale = 0.8)

STAKEHOLDER INVOLVEMENT

The objective of SISP in industry is competitive advantage. 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 county government do not reflect this pattern of participation in SISP. The elected officials do not structure, lead and control SISP for most counties. Responses to question 12 concerning level of involvement in developing IT strategic plans, show non-elected career officials, the CIOs and the Central county IT offices, are highly involved in SISP with an N of 31 (Table 10).

At the state level the CIOs and the Central State IT offices are also highly involved. The major difference between state and county actor level of involvement is the high level of involvement of the Individual Agencies at the state level (Mean = 4.38 and N = 40). The Individual Agencies are almost as involved as are the CIOs and the Central State IT Offices (Table 10). The high levels of involvement may reflect the relative autonomy of Individual agencies. State level agencies set policy and receive funding directly from the state and federal government.

By definition SISP does not occur at middle levels of an organizational hierarchy in the private sector [Segars, Grover, and Teng, 1998]. IT planning in county governments; however, is a non-elected function that places planning lower in the hierarchy with respect to strategic decision making. Elected officials at strategic levels of county government are much less involved in SISP than would be expected if a private sector SISP model applied.

COUNTY 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. County IT grades shown in Table 2 vary from high to low (A through D). IT planning is one of the criteria for assigning grades. Although county IT performance grades vary, county responses to GPP Survey item:

Table 10. Frequency Table For Stakeholder Involvement In Developing The IT Strategic Plan

County Government Stakeholders and Developing IT Strategic Plans				State Government Stakeholders and Developing IT Strategic Plans [Dufner, Holley, and Reed, 2002]			
N = 38 Actor/ Stakeholder	Not Involved Rated 1 or 2	Somewhat Involved Rated 3	Very Involved Rated 4 or 5	N = 48 Actor/ Stakeholder	Not Involved Rated 1 or 2	Somewhat Involved Rated 3	Very Involved Rated 4 or 5
County board, council or commission	27	4	6	State Legislature	41	6	1
Legislative committee	24	3	8	Legislative Committee	40	6	1
Chief elected official	15	11	4	Governor	13	9	26
Chief administrative officer	17	9	11	No State Equivalent			
Executive Committee(s)	10	10	8	Executive Committee	11	6	23
CIO	0	1	31	CIO	0	0	45
Central county IT office	5	2	31	Central IT	3	4	41
IT Steering Committee	8	7	16	IT Steering Committee	6	11	28
Individual departments	9	10	19	Individual State Agencies	2	6	40
IT end-users	27	8	3	IT End Users	22	17	9
External consultants	21	14	3	External Consultants	40	6	1
External vendors	32	5	1	External vendors	46	2	0
Citizens	35	2	1	Citizens	45	0	3

Based on Questionnaire Item 12 (Appendix I).

“Does your county have a county wide information technology strategic plan?”

do not. Most respondents reported either having a countywide IT strategic plan in place or in progress (Table 11).

Table 11. Counties at GPP IT Performance High (Grade of B+ or higher) and Low (C or lower)

Does your county have a countywide information technology strategic plan?				
N= 37	Yes	In Progress	No	Total Number of Counties
HIGH (Grade of B+ or higher)	7	1	0	8
MIDDLE (Grade of B through C)	14	2	3	19
LOW (Grade of C- or lower)	4	4	3	11
N	25	7	6	38

Note: Grades are those assigned to the county’s IT by GPP

Table 12 shows the same result at the state level. Although state IT performance grades vary, responses to GPP Survey item:

“Does your state have a statewide information technology strategic plan?”

do not. Most respondents reported either having a statewide IT strategic plan in place or in progress.

Only seven counties receiving an IT grade of B+ or higher (Table 11) 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).

Table 12. States at GPP IT Performance High (Grade of B+ or higher) and Low (C or lower) [Dufner, Holley and Reed, 2002]

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

Note: Grades are those assigned to the county’s IT by GPP

Strategic plans are in place in twenty-five counties, but only seven received grades of B+ or better. Although the numbers are small and many factors contribute to the overall county IT grade, the data suggest a weak relationship between having a countywide IT strategic plan in place and receiving higher grades for overall IT performance.

The state findings (Table 12) are similar to those found at the county level. Of 48 states only nine received a grade of B+ or better. Yet 38 states are reported to have a statewide strategic plan in place (Table 12).

The grades are only slightly related to having an IT strategic plan in place. The relationship between having a plan in place and grade for overall IT performance is worthy of further investigation for both counties and states.

SISP in counties is further called into question by the county responses to GPP survey item 13:

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

Although 25 counties reported a countywide SISP in place or in progress, only 20 counties reported their overall Strategic Plan included an IT component. Four counties reported an IT component is “in progress”.

Where individual departments report overall strategic plans, nineteen counties reported that less than 40% of their strategic plans contained an information technology component and seventeen counties reported that more than 40% contained an information technology component. These findings further support the assumption that IT planning in county governments occurs at lower levels in the hierarchies and focuses on operations rather than policy or strategy.

VI. CONCLUSIONS

Features that characterize SISP in the private sector were weak or lacking in the county and state governments studied. The top echelons of county and state government, where goals and objectives are decided by elected policymakers, are not involved in the IT planning process. Instead, counties and states report that strategic IT planning is taking place at lower levels in the government organization – at the level of the CIO and the central county IT office. The involvement of these IT elements is high, but lacks differentiation characteristic of strategic involvement in the private sector. For each of these actors, the level of involvement is about the same for both strategic and tactical functions. On the other hand, the county Chief Administrative Officer exhibits a pattern of involvement with IT planning similar to the pattern of private sector executive involvement (i.e., more involved with strategic than tactical IT functions) – however, the Chief Administrative Officer typically is not an elected official and may not be a primary actor in formulating the ordinances and mandates constituting the goals and objectives of county government.

The findings are consistent with findings of 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 to obtain the longest range planning horizon possible for government.

A difference exists between the private sector and public sector views of SISP. County government relies on IT managers below the strategic hierarchical level of elected policy and objectives setting to do IT planning whereas the private sector relies on executives at the top to provide strategic direction for the organization. As in state government, IT planning in county government is tactical rather than strategic.

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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EDITOR'S NOTE: The following reference list contains the address of World Wide Web pages. Readers who have the ability to access the Web directly from their computer or are reading the paper on the Web, can gain direct access to these references. Readers are warned, however, that

1. these links existed as of the date of publication but are not guaranteed to be working thereafter.
2. the contents of Web pages may change over time. Where version information is provided in the References, different versions may not contain the information or the conclusions referenced.
3. the authors of the Web pages, not CAIS, are responsible for the accuracy of their content.
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APPENDIX I.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, pg. 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 developing IT Systems and Projects	Approving the procurement of IT Systems and Hardware	Overseeing implementation of IT Systems, and Projects	Overseeing implementation
County board, council, or commission	V1	V2	V3	V4	V5	V6
Legislative committee(s)	V7	V8	V9	V10	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 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. V 98 Is there an information technology component to your county's overall strategic plan? (No, Yes, or In progress)
- c. V 99 What proportion of individual county departments have information technology strategic plans in place? (100%, Over 60%, 40-60%, Less than 40%, None)
- d. V 100 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)
- V 101 County Grade for Overall IT Performance ⁷

APPENDIX II. COUNTY GRADE REPORT CRITERIA AND METHODOLOGY

This appendix reports the criteria and methodology used by the Campbell Public Affairs Institute, Government Performance Project at Syracuse University to grade IT management at the county level. Details can be found at:

http://www.maxwell.syr.edu/gpp/grade/county_2002/criteria_ITmanagement.asp

County Grade Reports 2002

Criteria and Methodology

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 of the criterion had specific elements that helped frame the components of each.

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

⁷ Variable added by the authors from Government Performance Project State Survey. [2000]

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 county-wide strategic plan

The level of IT planning that occurs county-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 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 non-governmental 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 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 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 who 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 pre-tested 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 pre-tested among selected counties in advance of the final survey instrument being completed.

The GPP IT survey was designed to assess seven criteria. The data from the survey was 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 were then evaluated within each criteria to develop an overall grade for each criteria, again ranging from "A" to "F". Finally, each criteria 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.

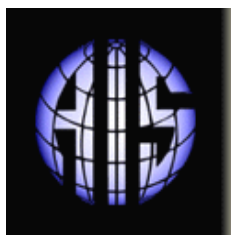
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