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Outsourcing contracts as instruments of risk management

Insights from two successful public contracts

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Abstract

Purpose – This paper aims to examine contracts in public jurisdictions to compare academic theories related to outsourcing risks and risk management strategies to current practice in order to extend and refine theory concerning what risk management strategies can, or should, be included in outsourcing contracts.

Design/methodology/approach – An automated content analysis tool is used to rigorously compare contract documents in two public jurisdictions to a comprehensive outsourcing risk framework from previous research.

Findings – The findings indicate that although IS outsourcing risk factors are widely acknowledged in the literature, they are not fully specified in the outsourcing contracts that are implemented in some public organizations. This research surfaces some of the differences in the techniques implemented through actual contracts to manage the risks inherent in IS outsourcing, including some strategies not previously identified in the literature. Also, not all risks need to be addressed in the contract to have a successful outsourcing engagement.

Practical implications – The improved framework for thinking about risk management strategies in the contracting process shown within the paper can provide important ideas and insights for managers contemplating or renewing outsourcing engagements.

Originality/value – This paper uses content analysis to rigorously compare academic theory to actual practice to extend theory. Specifically, it discovers several risk management strategies that have not been presented in previous research.

Keywords Outsourcing, Information management, Risk management, Contracts

Paper type Research paper

Introduction

Highly visible failures of information systems (IS) in recent outsourcing contracts in the public sector have brought the risks associated with this management practice into focus. For example, the State of Connecticut abandoned its entire outsourcing program after large sums of money were already invested (LeSueur, 1999). The county of San Diego, California has had numerous problems with their seven-year, $644 million outsourcing arrangement with a consortium led by Computer Sciences Corporation, from which they are still trying to recover (Field, 2002). Such failures are not limited to US public sector organizations. The British Ministry of Defense spent £130 million on a centralized inventory and asset management system, but it was never completed and they were only able to salvage £12 million in hardware from the project (Arnott, 2003). These and other well-publicized failures have fueled the public perception of sloppy

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management practices in public organizations. However, the Gartner Group predicts that by 2005, 75 percent of enterprises will fail to recognize and mitigate the risks associated with outsourcing (Murphy, 2003).

There has been considerable research on IS outsourcing in the academic literature. Some researchers have focused their attention on the elements of a successful sourcing decision drawing from the management literature (Lacity and Willcocks, 1998) while others have examined the methods of making the outsourcing decision drawing from economics literature (Willcocks *et al.*, 1996). Previous literature has examined IS outsourcing and its impact upon organizational strategy (Grover *et al.*, 1994) while others have focused on the knowledge impacts of outsourcing various business processes (Willcocks *et al.*, 2004). Other researchers admonish organizations to maximize flexibility and control (Lacity *et al.*, 1995) to ensure success.

Additional research focused on highlighting the differences of IS outsourcing in the public versus the private sectors. This research has shown that more managers are moving toward outcome-based contracts as a way to shift risk to the vendor (Currie, 1996). Research in the public sector reveals that its distinct contexts influence both the direction and degree of IS outsourcing (Willcocks and Currie, 1997). Finally, there has been considerable interest in public sector outsourcing as a strategic partnership (Willcocks and Kern, 1998), while others have emphasized the factors that influence these relationships (Kern and Willcocks, 2002).

Any large IS outsourcing engagement has many project management documents (requests for proposals, proposals, contracts, etc.), but it is the importance of contracts highlighted in previous research (Lacity and Hirschheim, 1993) that drives this paper. Lacity and Hirschheim (1993) note that every manager they interviewed stated that the contract was the most important element of a successful outsourcing relationship because it "established the balance of power" between the parties. Clearly, the contract plays a key role in defining the outsourcing relationship. Yet previous research has not made a rigorous and systematic analysis of contract verbiage and semantics with regard to risks and management strategies. This paper focuses on the contract as a mechanism for addressing risks associated with IS outsourcing as well as a tool for implementing management strategies to address these risks. Our reason for investigating contracts is the central role they play in the structure and management of IS outsourcing arrangements. We look at the contract to uncover both its strengths and limitations as a mechanism for managing the outsourcing engagement. What management strategies can be effectively specified in a contract? What risks and management strategies cannot be addressed in the contract? Finally, we seek to understand whether all risks must be addressed in order to have a successful engagement. This research begins to draw boundaries around contracts as a means to address the risks associated with IS outsourcing.

In order to help advance the discourse on risk management strategies in IS outsourcing, we conducted an empirical analysis of two outsourcing contracts, each with a total value over $10 million, from Alberta, Canada and Texas, USA. We use executed contracts from two public jurisdictions to help ground the research in practice, while drawing extensively on previous literature to ground the paper in theory. Content analysis is used to identify what IS outsourcing risk factors and management mitigation strategies are specified in the contracts. This analysis highlights the gap between management strategies recommended in current literature

and the actual practice of writing contracts to address those strategies. Our interest is restricted to the examination of the role contracts play in addressing risks and specifying risk management strategies that are appropriate to the scope of the outsourcing engagement.

A key element of this research centers on the concept of a successful engagement. For the purposes of this research, a successful outsourcing contract is one that has been in place for more than two years and the outsourcing organization is satisfied with the vendor's performance and intends to renew the contract. While this is a crude definition, it is easily applied and difficult to refute.

Framework for analyzing risk factors

Several researchers have offered risk analyses of IS outsourcing (Lacity *et al.*, 1995; Earl, 1996; Aubert *et al.*, 1998; Aubert *et al.*, 1999; Bhattacharya *et al.*, 2003) while others have examined the process or results of outsourcing in different environments (Aubert *et al.*, 2001; Rohde, 2004). The framework for IS outsourcing risks analysis that we use in this research was developed by Sullivan and Ngwenyama (2005). This is the only framework we have found that collects all of the risks and management strategies identified in the scholarly literature on IS outsourcing into a single, organized structure. This framework defines seven IS outsourcing risk categories and numerous risk factors. It facilitates the analysis of documents relating to IS outsourcing. This framework is presented in Appendix 1.

The framework organizes and consolidates both risks identified in the literature and the management strategies suggested to address these risks into a format that facilitates the analysis of textual data. This framework has been used previously to analyze outsourcing guidelines published by public sector jurisdictions (Sullivan and Ngwenyama, 2005). While policy guidelines are more abstract conceptualizations of what could go wrong and ways to deal with these situations, contracts focus on concrete actions and outcomes that are either required or prohibited. Contracts represent an actual transaction in a real situation and may differ from the policies under which they were created.

The research on transaction costs specifies cost drivers such as:

- search and information costs;
- bargaining costs; and
- policing and enforcement costs (Coase, 1937; Williamson, 1975; Williamson, 1979).

While contracts often do not address the issues related to search costs, they can address monitoring and management costs. All parties to the contract must agree to its terms and conditions as well as the rights it affords and the obligations it imposes. This is very different from the unilateral perspective of policy guidelines. The contract allocates and balances the actual costs of the transaction between the parties. While policy guidelines are easy to promulgate, contracts require the agreement of other parties in an arms-length transaction. Therefore, what is promulgated and what is agreed upon are often very different things. This research aims to explore risk issues as they relate to contracts and determine the risks that can or cannot be addressed effectively in a contract.

Categories of risk

There are many definitions of risk. Much of the research on IS outsourcing classifies risk into two broad categories:

(1) Prescriptions for appreciating and managing risk factors (Lacity *et al.*, 1995; Earl, 1996; Willcocks and Lacity, 1998).

(2) Approaches to measuring and analyzing risks and constructing specific management instruments (such as outsourcing policies and contracts) to address them (Aubert *et al.*, 1998; Aubert *et al.*, 1999; Ngwenyama and Bryson, 1999; Bryson *et al.*, 2000).

Recently, two researchers (Alter and Sherer, 2004; Sherer and Alter, 2004) have presented several different conceptualizations of risk: different negative outcomes; factors leading to negative outcomes; probability of negative outcomes; and difficulty in estimating an outcome. The framework used for this research was chosen because it includes elements of all of these views.

Research method and empirical materials

The research method

Content analysis is a method of manual or automated analysis of the semantic content of documents (e.g. newspapers, contracts and transcripts of audio or video media), to make inferences, derive in-depth understanding, or to draw conclusions about the text (Weber, 1990; Neuendorf, 2002). According to Krippendorff:

> Content analysis research is motivated by the search for techniques to infer from symbolic data what would be either too costly, no longer possible, or too obtrusive by the use of other [research] techniques (Krippendorf, 1980, p. 51).

To conduct a content analysis on any text, the researcher creates a dictionary of terms consisting of clusters of words or phrases that form mutually exclusive categories for analyzing documents and coding the text (Weber, 1990, p. 37). Computer supported content analysis is a particularly powerful technique because of its potential to systematically analyze extremely large volumes of data that would overwhelm a human. Software tools also provide consistency and reliability of the coding (Rosenburg *et al.*, 1990; Roberts and Popping, 1993). We used an automated tool to conduct the content analysis of these contracts for two key reasons. First, an automated tool greatly facilitated the organization of our data and its relationship to our analytical framework. The risk framework consists of 25 individual risks and 29 separate management strategies. In addition, the contract documents themselves consisted of almost 700 pages (549 pages for Texas and 144 pages for Alberta). Second, content analysis provided a more thorough analysis of the documents by allowing us to easily compare how each contract implemented similar management strategies from the framework. One of the objectives of our analysis was to surface any information about risk factors and risk management strategies embedded in the contracts. Evaluating qualitative government outsourcing contracts from different international jurisdictions poses several challenges due to differences in language and legal context, the philosophy of public management, the scope and purpose of the contracts, and so on. In this study we use HyperRESEARCH 2.0. A small portion of the documents were analyzed manually because they were not available in an appropriate format.

Content analysis procedure

The main contracts from both jurisdictions came in the form of Microsoft Word documents, which could be saved as ASCII text. The supplemental agreements relating to the Texas contract could not be converted to ASCII text; therefore, these documents were analyzed manually. However, since the contract clauses in these agreements were clearly marked with descriptive sub-headings, this was not a major hindrance to the research.

The content analysis of the documents followed a three-stage procedure:

(1) Definition of search terms for identifying themes within the documents.

(2) Exhaustive searching of the documents for specific observations of themes related to IS outsourcing risks and their effective mitigation.

(3) Analysis and interpretation of the empirical findings.

The starting point for constructing the search terms for our content analysis was the risk framework presented in Appendix 1. From these we developed an initial set of search terms to begin our analysis. However, the identification of appropriate search terms required several iterations of searching, reading and interpreting text segments. The stage 2 activities of the exhaustive search procedure are as follows:

- Once the documents were converted from their original form into ASCII text, they were loaded into HyperRESEARCH 2.0 without modification.
- We searched the documents for keywords that matched both the risks and the management strategies identified in the framework.
- We searched the documents for each coded word or word grouping. We read the surrounding text to gain an understanding of the topic being discussed, and its relation to the risk factors and risk management strategies. Since the documents came from different countries, we included slightly different terminology for the same risk types. As each occurrence of the term was discovered, these sentences and paragraphs were coded back to the risk factors and management strategies that they represented. As additional risk terms were uncovered, we repeated the process beginning with stage 2 in order to ensure that our analysis was complete.
- The coded sentences were then read to determine how well they reflected the risk factors involved.
- Once we completed the coding and classification of the text excerpts, we were able to determine what risk factors and management strategies were identified and specified in each contract.

Both authors participated in the analysis to ensure that the assessments were accurate. In addition, several other scholarly colleagues reviewed the analysis to ensure that it was consistent.

Neither contract under review specified all of the risks or risk mitigation strategies defined in the academic literature. A thorough search of each of the documents revealed which risk management strategies were included. For those risk management strategies that were included in the contracts, a careful reading of the text allowed us to assess the degree to which the risk management strategies were specified and to assign a grade to each risk category in the contract. Using a five-step scale, we rated each

contract against each risk category of our framework as: "not specified", "poorly specified", "moderately specified", "adequately specified" and "fully specified". A rating of "not specified" indicates that none of the risk management strategies for that category were specified in the contract. Alternatively, if fewer than half of the risk management strategies for a particular category were specified in the contract and some of them were incomplete, a rating of "poorly specified" is assigned. If a category received a rating of "moderately specified", more than half of the risk management strategies associated with that category were mentioned but were not fully specified. A rating of "adequately specified" is assigned if more than half of the risk management strategies were thoroughly specified. Finally, a rating of "fully specified" indicates that all the risk management strategies are completely presented. Some of the risk management strategies in our framework are not applicable to contracts. These are noted within the text and summary tables.

The empirical materials

The empirical materials of this research are two large-scale IS outsourcing contracts from the government jurisdictions of Texas, USA and Alberta, Canada. We selected these contracts because they were written under the same guidelines that Sullivan and Ngwenyama (2005) reported in their earlier research. While there are differences between the jurisdictions from which we draw our contracts for investigation, there are several important similarities that provide some cohesiveness to our analysis. First, both jurisdictions are English speaking cultures whose judicial systems are modeled upon English common law. Second, both have somewhat similar styles of democratic government based on a philosophy of accountability to the citizenry. Third, both jurisdictions use outsourcing contracts as an instrument to acquire IS capabilities and systems. Fourth, they both are serious about their responsibility to provide their citizens benefits for taxes paid. Further, the contracts are typical of the multi-period IS outsourcing contracts issued by government agencies in English speaking countries. Both contracts cover information systems support and services in excess of US$10 million for four years or more. The size of the contracts and their length of several years gave all parties an incentive to write clear, detailed, and complete contracts.

The contract analysis

Contract background

The Texas outsourcing contract is between the Texas Department of Information Resources and Integrated Systems Solutions Corporation (ISSC), a wholly owned subsidiary of IBM. The contract was for services to manage data centers for the Texas Department of Criminal Justice (TDCJ) and became effective on March 1, 1996. It provides for the development and maintenance of IT applications and the back-up and recovery of data in support of the state's computer systems. The Texas contract consists of a single master contract and four supplemental agreements. The master contract specifies the overall structure of the outsourcing relationship, payment terms, and conflict resolution processes, and jurisdictions. The supplemental agreements allow for more flexible and detailed specifications of scopes of work, performance metrics, and time horizons. At the time of this research, only supplemental agreements 2 and 4 were still active and in force. Supplemental agreements 1 and 3 had been completed successfully or superceded. On December 30, 1997 the Master Contract and

supplemental agreements were assigned from the initial vendor, ISSC to Northrop Grumman Technical Services, Inc. (NGTSI). This assignment became effective on March 1, 1998. The intervening two months allowed for an effective transition of services and responsibilities from ISSC to NGTSI. We will focus our analysis on the initial master contract with ISSC and the supplemental agreements that are still in effect. The Texas contract is an example of a flexible outsourcing contract as it has grown and changed over the last eight years.

The second contract in our analysis is between the Alberta Ministry of Human Resources and Employment (hereinafter AHR&E) and CGI, Inc. of North America. In July 2002, AHR&E entered into a four year $12 million contract with CGI[1], Inc. to provide application maintenance services for their entire existing application portfolio. The application maintenance services specified in the contract include upgrades and development of additional applications to support the current portfolio, provided it does not require more than 300 hours of programmer time.

Detailed findings

The following section of the paper focuses on those risk management strategies that are interesting or innovative for the way that they have been specified in the contracts or are unique for these specific scopes of work. A detailed presentation of each risk management strategy and whether it was included in the contract is presented in each of the subsequent sections of the paper.

To facilitate our discussion, we have presented the management strategies for each risk category in separate tables in the section of the paper in which it is discussed. For each management strategy, we indicate whether it is "addressed", "not addressed", or "not applicable" for each contract. This presentation form also emphasizes the fact that we have focused on the implementation of management strategies in the contract rather than the explicit enumeration of risks related to IS outsourcing.

Risk category 1. Outsourcer's lack of experience. The first category of risk presented in the framework relates to the experience of the outsourcing firm (Table I). Many problems that arise during the contract period can be traced back to a lack of experience on the part of the outsourcing firm. Three strategies linked to these risks can be addressed within the framework of the contract: (3) using an experienced consultant to perform an independent verification and validation (IV&V) function on the contract; (5) signing detailed contracts instead of sketchy, open-ended contracts; and (7) requiring the vendor firm to specify all costs associated with transitioning services from the outsourcing firm to the vendor organization. Management strategies (1), (2), (4), and (6) cannot, or should not, be specified within the contract for obvious reasons.

Both of these contracts specify audit functions that will be performed by separate government entities or by the project management teams. Alberta specifies audits that may be performed internally or by others retained for the purpose of ensuring accuracy and completeness in the vendor's charges and the work performed. Another clause in the contract expands upon this access requirement stating that the auditors and AHR&E personnel must be allowed access to documentation relating to the operational, administrative, and methodological aspects of the engagement. AHR&E personnel must also be allowed to attend the meetings of all system development and maintenance projects. Finally, the vendor is required to assume "the costs related to

Suggested management strategies	Texas, USA	Alberta, CA
(1) Hire a professional information systems project manager who is familiar with the technology to manage the contract	Addressed	Addressed
(2) Hire an experienced outsourcing consultant to assist in the creation and management of the contract	Not applicable	Not applicable
(3) Hire an experienced consultant to perform an independent verification and validation (IV&V) function on the contract	Addressed	Addressed
(4) Outsource incrementally with small projects and gain experience over time	Not applicable	Not applicable
(5) Sign detailed contracts not sketchy, open-ended contracts	Addressed	Addressed
(6) Prepare detailed estimates of the cost to manage the contract once it is implemented	Not applicable	Not applicable
(7) Require vendor firms to specify all costs associated with transitioning services from the outsourcing firm to the vendor organization	Addressed	Addressed
Overall assessment of risk category 1	Fully specified	Fully specified

Source: Adapted from Sullivan and Ngwenyama (2005)

Table I.
Risk management strategies for risk category 1: outsourcer's lack of experience

reasonable internal and external audit activity" (Alberta Ministry of Human Resources and Employment, 2002) related to this contract. This audit language is presented in Appendix 2.

In addition, both contracts devote a great deal of attention to the complete specification of the systems to be supported and the tools to be used. If additional services are required there is a detailed procedure for specifying the new service and determining its cost.

Significant attention is devoted to transition activities in both contracts. The Texas contract has a separate schedule that details all the steps needed to transfer control of the datacenter from the Texas Department of Criminal Justice to the vendor (see appendix 2 – Texas contract). The contract also specifies how the leased assets, software licenses and staff will be handled during the transition from the TDCJ to the vendor organization. Further, the contract specifies that the vendor will be responsible for many of the costs associated with the transition. Finally, the contract also specifies a detailed transition plan as a separate schedule.

The Alberta contract also specifies transition activities thoroughly although more simply in that they only require the vendor firm to assume the costs to transition all the necessary services as required (see Appendix 2 – Alberta contract).

Since there are only three management strategies which can be implemented effectively in the contract and both contracts address all these management strategies, we grade both contracts as "fully addressed" for this risk category.

Risk category 2. Vendor's lack of experience. The risks relating to the relative experience and expertise of the vendor is an essential element of risk in any IS outsourcing engagement. If a vendor is not able to deliver the knowledge and expertise promised, the results can be disastrous for the outsourcing organization (Aubert *et al.*,

1998). Any outsourcing contract written with any vendor assumes the vendor possesses the requisite skills and experience to fulfill the contract requirements. If this were not the case, then no contract would be executed. The contract is not an appropriate mechanism for addressing these risks; these issues are usually resolved in the proposal phase. Therefore, we did not expect to find any reference to the vendor's experience in the contracts. However, there is one management strategy that is usually employed in outsourcing contracts. This is the right of the outsourcing organization to approve all vendor personnel assigned to work on the engagement. Both contracts under review contain these clauses. Even so, we rated both contracts as "not applicable" for this risk category (Table II).

Risk category 3. Opportunistic behavior by the vendor. Opportunistic behavior by the vendor is often defined as "self-interest seeking with guile" leading to shirking, lying or other unethical behavior on the part of the agent or the principal (Williamson, 1979; Aubert *et al.*, 1998; Ngwenyama and Bryson, 1999). Opportunism includes making unrealistic or untrue representations about vendor capabilities in the proposal phases of the process and shirking under the terms of the contract once the contract has been executed. Opportunistic behavior can occur at any time during the outsourcing process. A limited number of viable vendors in the market and high switching costs for the outsourcer enhance a vendor's ability to engage in opportunistic behavior. Asset specificity can be another source of opportunism. If an asset is only useful in a narrowly defined area, the party investing in the asset stands to lose substantially if the transaction is not completed (Aubert *et al.*, 1998).

From a risk perspective, previous literature on outsourcing shows that asset specificity and related switching costs can be a factor that shifts bargaining power away from the outsourcing organization and toward the vendor (Aubert *et al.*, 1998; Gay and Essinger, 2000). The Texas Department of Criminal Justice has addressed this issue by including a termination assistance clause in the original Master contract document which specifies that "ISSC (the vendor) will cooperate with the state to assist with the orderly transfer of the services, functions and operations provided by ISSC hereunder to another services provider or the state itself." (Texas Department of Information Resources, 1996) (section 10.5). The assistance specified in this section includes migration of software and services as well as turning over all relevant documentation, answering all of the new service provider's questions, and assisting in any other manner required either by the state or by the new service provider. Finally, any hardware that is used in support of this contract will be transferred to the state at

Suggested management strategies	Texas, USA	Alberta,CA
(1) Hire a professional project manager to manage both the contract and the vendor from the outsourcing organization's side of the relationship and act as an advocate for the organization's goals	Not applicable	Not applicable
(2) Perform a comprehensive background review of all potential vendors and check their references	Not applicable	Not applicable
Overall assessment of risk category 2	Not applicable	Not applicable

Source: Adapted from Sullivan and Ngwenyama (2005)

Table II.
Risk management strategies for risk category 2: vendor's lack of experience

terms that are mutually agreeable to both parties. What is interesting about this clause is that while it is an excellent management strategy to avoid vendor lock-in due to high switching costs, it is not presented in any of the previous literature that we have reviewed.

Sullivan and Ngwenyama (2005) suggest the inclusion of penalties and incentives in the contract to align the interests of outsourcer and vendor (Ngwenyama and Bryson, 1999; Bryson *et al.*, 2000). Both of these contracts include penalties; yet, neither includes incentives for improved performance or performance that consistently surpasses the specified service levels.

Abstract risks like opportunism cannot be effectively specified in the contract. However, Texas includes a management strategy to address vendor opportunism that does not appear in previous literature on outsourcing. Supplemental Agreement 2 of the Texas contract requires NGTSI to certify that they are not in collusion with any other vendors relating to this contract. This includes violations of any state or federal antitrust laws. The vendor is also required to certify that no gratuities have been offered or paid to any public official or employee in connection with this contract. Finally, NGTSI must notify the Texas Department of Criminal Justice if any of these certifications change as soon as possible (Texas Department of Criminal Justice, 2001) (section 17.22.d-g), (see Appendix 2 – Texas contract). These clauses are as thorough as they can be to ensure against opportunistic behaviors. Requiring the vendor to certify their past and future behavior under the contract may be a useful way to ensure compliance not only with the terms of the contract but with applicable local, regional, and national laws. The Alberta contract does not contain a clause requiring similar legal and regulatory compliance.

The IT Contract Committee is a higher level of management representing both the AHR&E and CGI management teams. This committee oversees the Contract Management Committee and resolves any disputes that may arise there. The IT Contract Committee plays a strategic role in determining the technological direction for the engagement and ensures that the resources expended under the contract meet the strategic needs of AHR&E. Given the layers of management devoted to this contract, there is little risk of Alberta losing control of this engagement. It should be noted that these additional layers of management come at a cost.

The next management strategy is the admonition to avoid proprietary technology that will limit future options or bind an outsourcing firm to a particular vendor. The TDCJ addresses this issue by requiring the vendor to provide a license to the State for its own internal use on mutually agreeable terms or to suggest a commercially available substitute as a replacement. This management strategy for addressing risks of lock-in to proprietary technology has not been presented in previous research.

The Texas contract is assessed as "adequately specified" for this category while the Alberta contract is given a lower rating of "moderately specified" (Table III).

Risk category 4. Vendor financial instability. The financial strength and stability of the vendor firm is also a significant risk area with serious implications for any outsourcing organization. The risks relating to a vendor's financial instability are generally addressed before a contract is signed. A vendor contemplating bankruptcy may be more willing to shirk under the terms of the contract or to walk altogether (Aubert *et al.*, 1998; Ngwenyama and Bryson, 1999). The effects of becoming dependent upon a vendor who is no longer in business may have serious consequences for the

Suggested management strategies	Texas, USA	Alberta, CA
(1) Include penalty and incentive clauses in the contract to manage the vendor's behavior	Penalties not incentives	Penalties not incentives
(2) Hire an outside consultant to perform an independent verification and validation (IV&V) function	Addressed	Addressed
(3) Hire a professional IT project manager for the engagement	Addressed	Addressed
(4) Check professional references thoroughly	Not applicable	Not applicable
(5) Avoid proprietary technologies and employ mainstream technologies as much as possible. If a specific technology is required, ensure that adequate capability is maintained within the organization to support the technology	Addressed	Addressed
(6) Negotiate flexible contracts that can be renegotiated at specified intervals	Addressed	Addressed
(7) Termination assistance clause requiring the vendor to assist in the transition to another vendor to avoid lock-in due to high switching costs[a]	Addressed	Not addressed
(8) Specification of commercially available alternative technologies to avoid vendor lock-in due to asset specificity or proprietary technology[a]	Addressed	Not addressed
(9) Certification of compliance with all local, state, and national laws relating to public contracting to ensure against vendor opportunism *	Addressed	Not addressed
Overall assessment of risk category 3	Adequately specified	Moderately specified

Note: [a]Management strategies found in the contracts, but not in previous research
Source: Adapted from Sullivan and Ngwenyama (2005)

Table III.
Risk management strategies for risk category 3: opportunism by vendor

outsourcing organization (Earl, 1996; Gay and Essinger, 2000). Recent research has focused on issues relating to risks that are inherited from significant business partners (Sutton, 2006) (Table IV).

A vendor's financial position may change over time. This fact is recognized and addressed in the second supplemental agreement to the Texas contract. This amendment to the original contract document requires Northrop Grumman Technical Services, Inc. to make several significant warrantees and certifications. The first is that there is no pending litigation or possibility of default by Northrop Grumman in any of their existing contracts with any other clients. The second is that they are not in any danger of defaulting on any of their financial instruments or obligations such as loans, mortgages, leases, or licenses. Further, if any of these conditions change during the course of the engagement, Northrop Grumman is to notify the State of Texas as soon as possible. If they fail to notify Texas of a change in any of these certifications regarding

Suggested management strategies	Texas, USA	Alberta, CA
(1) Carefully consider a potential vendor's size and financial stability before entering into a large, long-term contract	Addressed	Addressed
(2) Ensure that the vendor achieves an acceptable profit on the engagement	Not addressed	Not addressed
(3) Place vendor source code in escrow in case of bankruptcy or cessation of operations	Not addressed	Not necessary
(4) Post a confirmable letter of credit on a prime bank as surety of performance to ensure vendor solvency and adequate performance under the contract[a]	Not addressed	Addressed
(5) Prompt notification of changes in financial position or adverse developments to ensure vendor solvency[a]	Addressed	Not addressed
Overall assessment of risk category 3	Poorly specified	Moderately specified

Note: [a]Management strategies found in the contracts, but not in previous research
Source: Adapted from Sullivan and Ngwenyama (2005)

Table IV.
Risk management strategies for risk category 4: vendor financial instability

their financial position, they are considered to be in breach of the contract. This represents another management strategy that we have not seen in previous literature.

The risk management strategy that concerns putting code in escrow is not addressed at all in the Texas contract. No suggestion is made to place any vendor source code in escrow to guard against bankruptcy or impaired operations, nor is it suggested to ensure that the vendor achieves an acceptable profit on the engagement (Bryson *et al.*, 2000).

Alberta recognizes the risk relating to a vendor's financial position and addresses it in an innovative manner. The Alberta contract requires the selected vendor to post an irrevocable, unconditional letter of credit on a Canadian financial institution that is acceptable to the Alberta Human Resources and Employment Ministry in the amount of CA$1,000,000. In the event that AHR&E determines that CGI is in default on the contract, AHR&E will notify CGI of their intent to call upon the letter of credit in 21 days, up to the entire amount. Any final settlement will be determined by arbitration or by the Canadian courts. The letter of credit represents a significant proportion of the total value of the contract. This is an innovative contract requirement that serves to cover the outsourcing organization's exposure to a vendor's financial weakness while providing the vendor with a concrete incentive to ensure quality service. While this contract provision does not relieve an outsourcing organization from performing due diligence on a prospective vendor, it does help to ensure that a financial remedy is readily available in the event of poor performance. In addition, we have not seen this management strategy presented in previous outsourcing research.

The risks associated with the financial stability of the vendor can become significant drivers of overall project success or failure. Any public jurisdiction has an interest in treating all vendors equally while also ensuring that the public interest is protected. However, since the management strategies related to this risk category are not explicitly addressed in the Texas contract, we rate this category of risks and

management strategies as "poorly specified". Alberta takes a different and more flexible approach to addressing a vendor's financial position and stability. Therefore, we assess the Alberta contract as "moderately specified" for this risk category.

Risk category 5. Vendor performance monitoring. Risks associated with monitoring a vendor's performance under the contract include the following: monitoring problems that arise from an inability to completely specify the scope of the work to be performed (Williamson, 1975; Aubert *et al.*, 1998); applying penalties and incentives to contracts that depend upon accurate performance measures (Barzel, 1982; Nelson *et al.*, 1996); and problems measuring vendor and system performance which may lead to declining service levels and rising costs (Ngwenyama and Bryson, 1999; Bryson *et al.*, 2000). Table V presents strategies that have been suggested to deal with these issues.

The contract describes how additional performance metrics will be devised and applied in the future. The contract specifies an initial 90-day measurement period for the new services and related performance metrics. The parties will jointly agree and confirm the metrics, the methods for calculating them, and the minimum acceptable performance levels. The contract also specifies that service level penalties do not apply to the new performance metrics during the initial measurement period.

It is clear from our contract analysis that Texas understands the complex challenges involved in performance metrics and has taken an active approach to address these challenges. However, it should be noted that hardware-centric engagements such as data center management often lend themselves more readily to quantitative measurement than to more cognitive activities such as software development or application evaluation and analysis (Sturm *et al.*, 2000).

While the Alberta contract focuses on the more cognitive activities related to software maintenance, they still attempt to implement extensive performance metrics. The management strategy that advises the specification of outcome-based performance metrics appears to be followed wherever possible. One example of this

Suggested management strategies	Texas, USA	Alberta, CA
(1) Avoid signing incomplete contracts. Organizations should make sure that they specify all relevant service levels and how they will be measured	Addressed	Addressed
(2) Include incentive and penalty clauses in the contract	Penalties not incentives	Penalties not incentives
(3) Specify outcome-based performance metrics rather than work-based performance metrics	Addressed	Addressed
(4) Retain key personnel and their specific knowledge on performance monitoring teams	Addressed	Addressed
(5) Prepare detailed estimates for the management of the contract	Addressed	Addressed
(6) Construct a detailed project management plan	Addressed	Addressed
Overall assessment of risk category 3	Fully specified	Fully specified

Source: Adapted from Sullivan and Ngwenyama (2005)

Table V.
Risk management strategies for risk category 5 – vendor performance monitoring

is the minimum requirement of a 3.5 out of 5 rating on all customer satisfaction surveys that are to be completed on a regular basis. Most of the other service metrics stipulated in the contract specify performance in terms of successful outcomes rather than number of hours worked or number of lines of code written. The performance metrics indicate that AHR&E is very clear about what they are paying for in this contract. The Contract Management Committee is responsible for developing any additional performance metrics that may be necessary over the course of the contract.

The final two management strategies in this category relate to the management of the contract itself. The first of these recommends detailed cost estimates for the management of the contract. AHR&E explicitly shifts many of the costs to the vendor, such as the costs of preparing for project audits. Other costs will be incurred by the organization in terms of hiring their own project manager and staff to sit on the two contract management committees. Finally, the management strategy suggesting the preparation of a detailed project management plan is fully addressed in this contract as AHR&E has included a clause that allows it to approve all personnel assigned to the engagement, select its own project manager, and specify two contract management committees that will oversee the performance of the contract from the perspective of both the vendor and the outsourcing organization.

The effort to measure vendor performance is rife with pitfalls. This activity centers on the management of the outsourcing contract and impacts all other aspects of the engagement. It often determines the success of the outsourcing engagement. Both the Texas and Alberta contracts devote significant attention to performance metrics in their respective contracts. Although each agency takes a slightly different approach to performance metrics, we rate both contracts as "fully specified" for this category.

Risk category 6. Contract time horizon and technological discontinuity. Contract time horizon and technological discontinuity comprise the sixth risk category. Certain risks become relatively more significant as the term of the contract extends far into the future. Normal personnel turnover could deplete the vendor's pool of expertise resulting in contract performance problems. Technological improvements and breakthroughs can render the technology initially defined in the contract obsolete. To mitigate these risk factors, some have encouraged the use of short-term, flexible contracts (Lacity *et al.*, 1995; Lacity and Willcocks, 1995). Others caution that constantly renegotiating outsourcing contracts can be more trouble than it is worth and suggest that outsourcers include appropriate clauses in the contract to address conversion to new technologies (Earl, 1996). The longer the term of the contract, the more important these issues become (Table VI).

Change is a critical area in any outsourcing contract. This includes changes in people, technology, organizations, and their operating environment. This is probably the most difficult area of the contract to write and administer during the life of the engagement. The longer the term of the contract, the more flexibility is required to adapt to the changing needs of the organizations and the technological landscape.

The Texas contract addresses technological discontinuity in several ways. First, it requires the vendor to assist the agencies to assess and take advantage of technological advancements as they arise. In addition, the contract has a formula for pricing the new services that will arise from the adoption of new technologies that adds an element of flexibility to the contract. It also has a provision that requires the vendor to assess and recommend new technologies in light of current and future architectural standards that

are likely to impact the Texas Department of Criminal Justice. It is inherently risky for an outsourcing organization to ask a vendor to take such an active role in technology planning.

The Texas contract devotes significant attention to potential changes in the business or operating environment of the agencies participating in the outsourcing contract. The contract states that Texas may significantly reduce the volume of work required under the contract due to a number of changed circumstances that are specified as follows: "1) changes to locations where the State provides services; 2) changes in the services which the State provides; or 3) changes in the method of service delivery (other than use of another vendor)" (Texas Department of Information Resources, 1996) (Section 6.8 Extraordinary Reduction of State Work). If these changes are likely to persist, then the contract baselines are to be adjusted accordingly.

Another important management strategy is the preparation of a thorough technology transition plan that specifies replacement technology (Lacity and Hirschheim, 1993b). The Texas master contract provides an overall framework for contracting with certain pre-approved vendors. Each supplemental agreement includes a detailed proposal from the vendor firm that specifies the hardware and software that will be used to support operations on behalf of the Texas Department of Criminal Justice (TDCJ).

The Alberta contract has a separate section called the Annual Supplementary Operating Agreement (ASOA). The ASOA has the:

> ... objective of defining annual Service Level expectations, business transaction volume projections, and to respond to the impact of changes in information technology, management techniques, and AHR&E's expense reduction, service and application needs. This is intended to enable the Vendor to meet the requirements for the performance, availability, security, integrity, flexibility and functions of Application Maintenance environment (Alberta Ministry of Human Resources and Employment, 2002).

This clause gives the contract the necessary flexibility to improve service levels each year and adapt to technological changes that develop in the future.

Both the Texas and Alberta contracts address the issues related to the contract time horizon. However, Texas does not address the risks associated with the loss of qualified personnel due to turnover within the organization nor the management strategy to place vendor source code in escrow in case of an emergency or vendor

Suggested management strategies	Texas, USA	Alberta, CA
(1) Negotiate flexible contracts that can be renegotiated at specified intervals	Addressed	Addressed
(2) Develop thorough technology transition plans with the vendor. Ensure that vendor specifies replacement technology	Not addressed	Addressed
(3) Place vendor source code in escrow account in the event of vendor bankruptcy	Not addressed	Not necessary
Overall assessment of risk category 3	Poorly specified	Adequately specified

Source: Adapted from Sullivan and Ngwenyama (2005)

Table VI.
Risk management strategies for risk category 6 – contract horizon and technological discontinuity

bankruptcy. For these reasons, the Texas contract is rated as "poorly specified" for this category.

Alberta takes a very different approach to managing the risks associated with the contract time horizon. They have included a separate section of the contract called an annual supplementary operating agreement (ASOA) that does an excellent job of addressing the inherent tension between the need for flexibility and for a fully specified contract. For this reason we rate the Alberta contract as "adequately specified" for this category.

Risk category 7. Loss of core competencies and proprietary information. The seventh and final risk category of the framework concerns the potential loss of core competencies and proprietary information. Although managers are advised to limit outsourcing to non-core activities and to protect the firm's core competence, outsourcing almost always leads to loss of some core competence (Lacity and Hirschheim, 1993b). This is due to the interconnectedness of processes and activities (Earl, 1996). Data security is another essential element of outsourcing contracts that cannot be ignored (Lacity *et al.*, 1995). Many government organizations handle sensitive information about citizens that may be subject to various legal requirements for non-disclosure. The potential loss of core competencies and proprietary or sensitive information is a significant risk in any outsourcing contract. As more IT functions are outsourced, organizations run the risk of losing the ability to effectively manage or even perform mission-critical operations for the firm. The ability to clearly delineate the boundaries of various IT processes and functions is also critical. A related risk is the potential loss of sensitive and/or essential organizational data that could be disastrous for the organization (Table VII).

Both contracts focus on data security and data recovery. The Texas contract devotes a great deal of attention to the protection of organizational data. The contract focuses on the back-up and recovery of agency data. The Alberta contract devotes a great deal of attention to issues relating to data security and confidentiality, as well as retention and recovery. No "client identifiable information" can be disclosed outside AHR&E without a legally binding order from a competent jurisdiction. The vendor and their personnel must observe all of AHR&E's existing data security and access

Suggested management strategies	Texas, USA	Alberta, CA
(1) Take appropriate steps to retain key personnel and their specific knowledge within the organization	Not addressed	Not addressed
(2) Make clear and distinct separations of IS activities and functions	Addressed	Not addressed
(3) Require binding non-disclosure and non-compete clauses within the contract	Addressed	Addressed
(4) Work with the vendor to develop comprehensive plan for knowledge transfer	Not addressed	Not addressed
(5) Develop detailed disaster recovery plans	Addressed	Addressed
Overall assessment of risk category 3	Moderately specified	Poorly specified

Source: Adapted from Sullivan and Ngwenyama (2005)

Table VII.
Risk management strategies for risk category 7 – loss of core competencies and proprietary information

policies for the duration of the engagement. The contract specifies that AHR&E will perform regular security audits of the vendor's data management practices respecting AHR&E's data. The contract has a performance metric relating to loss of data that requires immediate notification in the event that any data is lost, corrupted, or cannot be restored from a back-up within two days. Security breaches due to unauthorized access to systems or data are also addressed. Failure to meet either of these performance metrics 100 percent of the time can result in penalties to the vendor of up to 10 percent of their invoice and recurrences will result in the vendor being found in breach of the contract.

Summary of the findings

Both Alberta and Texas addressed most of the risks presented in our framework to varying degrees. In many instances, their approaches to risk were similar. However, we also found some significant differences. Some of these differences in risk approach can be attributed to the different scopes of work covered by the respective contracts. However, other differences in risk approach may reflect differences in management structure, organizational culture or regulatory environment. The ratings each contract received in each category are presented in Table VIII.

Conclusions and contributions

The analytical framework used in this paper constitutes an attempt to unify the disparate research regarding the risks of IS outsourcing and the appropriate means of addressing these risks. Our focus is the outsourcing contract as an instrument to formulate and define management strategies used to address the risks inherent in the practice of outsourcing. While we observe significant differences in the research literature and practice, we also see that transaction cost theory and contract theory play significant roles in IS outsourcing and the implementation of risk management strategies. There are significant conflicts in the outsourcing literature regarding flexibility and completeness in the contract. Lacity and Hirschheim advise outsourcing organizations to avoid signing incomplete contracts and to fully specify all aspects of the contract, particularly in the area of performance metrics (Lacity *et al.*, 1995). Contract theory states that a complete contract is one that "specifies every possible state of the world" (Schwartz and Scott, 2003). However, flexibility in the contract implies room to change goals and objectives as well as the ways to achieve them. This

Risk categories	Management strategies for mitigating risks – Texas, USA	Management strategies for mitigating risks – Alberta, Canada
(1) Outsourcer's lack of experience	Fully specified	Fully specified
(2) Vendor's lack of experience	Not applicable	Not applicable
(3) Opportunistic behavior by the vendor	Adequately specified	Moderately specified
(4) Vendor financial instability	Poorly specified	Moderately specified
(5) Vendor performance monitoring	Fully specified	Fully specified
(6) Contract horizon and technology discontinuity	Poorly specified	Adequately specified
(7) Loss of core competence and proprietary information	Moderately specified	Poorly specified

Table VIII. Summary of risk categories

leaves many organizations in the difficult position of trying to balance these two conflicting objectives within the same contract. It is important to note that ambiguity in the contract is often a sign of flexibility and trust in the relationship (Sumantra and Moran, 1996; Bernheim and Whinston, 1998; Koh *et al.*, 2004; Miranda and Kavan, 2005). In addition, some scopes of work can and should be rigorously defined and complete, while others cannot be so specific. By conducting an analysis of actual outsourcing contracts, we have discovered additional risk management strategies that have not been presented previously in the scholarly literature. Specifically, we have found the following management strategies to be absent from the extant research:

- Termination assistance clause requiring the vendor to assist in the transition to another vendor to avoid lock-in due to high switching costs.
- Posting a confirmable letter of credit on a prime bank as surety of performance to ensure vendor solvency and adequate performance under the contract.
- Prompt notification of changes in financial position or adverse developments to ensure vendor solvency.
- Specification of commercially available alternative technologies to avoid vendor lock-in due to asset specificity or proprietary technology.
- Certification of compliance with all local, state, and national laws relating to public contracting to ensure against vendor opportunism.

We have provided IT managers responsible for developing outsourcing contracts with guidance and suggestions for ways to implement management strategies to address the most significant risks associated with outsourcing IT functions. This research highlights some of the more innovative approaches to writing contracts that need to evolve as the technological landscape changes and the needs of the outsourcing organization develop over time.

Finally, this paper has attempted to demonstrate the effectiveness of using content analysis on business documents as a way to rigorously compare academic theory with actual practice so that theory can be extended.

Limitations and suggestions for future research

This research shows that organizations do not have to address all risk management strategies in the contract to have a successful outsourcing relationship. However, since we only examine contracts in this research, we cannot conclude that some risk management strategies can be safely ignored. It may be necessary to address risks in other project management documents relating to the engagement. It will require further research to determine the relationships between the scope of work to be performed and the risks and management strategies that are most appropriate to address these other risks. This research shows that both Alberta and Texas carefully considered the scope of work to be performed and the risks and management strategies that should be included in their contracts. We suggest that both parties to a contract have their own risk management plans based on the framework of risks and management strategies developed in previous research, consolidated by Sullivan and Ngwenyama (2005), and further extended by this research.

One of the limitations of this research is that it focuses on public sector organizations. Therefore, some of our findings may not be generalizable to the private

sector. Private sector organizations have a great deal of flexibility in structuring outsourcing arrangements to align vendor interests with those of the outsourcing firm. These include joint ventures and the creation of a separate vendor firm to share cost savings and attract other organizations to use the services provided (Lacity *et al.*, 2003). These options are usually not available to their public sector counterparts.

While all of the risks and management strategies in this framework have been validated through previous research, it is still not clear whether it is necessary to address all of them in a contract in order to have a successful outsourcing engagement. Further, it is not clear whether some risks are more significant in some outsourcing projects than others or, whether some management strategies are more appropriate than others under different circumstances. We leave these questions for future research.

As stated above, differences in an organization's approach to outsourcing risk may be influenced by: the scope of work to be outsourced; management structure; organizational culture, or regulatory environment. Further research will be required to determine these possible effects and their relative weights.

It should also be noted that while both contracts in this research were large and posed potentially serious risks for the outsourcing organizations, the scope of work to be performed was clearly defined and specified. Prior experience with the function to be performed may play a very significant role in an organization's ability to outsource the function successfully. These are areas for further research.

Note

1. In May 2004 CGI merged with American Management Systems and is now one of the largest integrated IT services firms in North America.

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Appendix 1

Risk category	Short description of the risk factors	Suggested risk management strategies
1. Outsourcer's lack of experience	1. Lack of experience with the function or process to be outsourced can lead to poorly defined scope, declining service levels and higher costs 2. Lack of experience with the technology to be outsourced can lead to buying hardware and software that is not needed and higher costs associated with training personnel to use new equipment and applications 3. Lack of experience with IS outsourcing often gives the vendor an advantage in negotiating the contract and in shirking their commitments under the contract once the engagement has begun	1. Hire a professional information systems project manager 2. Hire an experienced outsourcing consultant to assist in the creation and management of the contract 3. Hire an experienced consultant to perform an independent verification and validation (IV&V) function on the contract 4. Outsource incrementally with small projects to gain experience over time 5. Sign detailed contracts not sketchy, open-ended contracts 6. Prepare detailed estimates of the cost to manage the contract 7. Require vendor firms to specify all costs associated with transitioning services
2. Vendor's lack of experience	1. Lack of experience with the function or process to be outsourced 2. Lack of experience with the technology to be outsourced 3. Lack of experience with IS Outsourcing itself. These risks apply to both the vendor org. and their personnel	1. Hire a professional project manager to manage both the contract and the vendor from the outsourcing organization's side of the relationship 2. Perform a comprehensive background review of all potential vendors and their personnel; check their references thoroughly
3. Opportunistic behavior by the vendor	1. Vendor's use of guile, deceit, or other unethical behavior 2. High switching costs may shield the vendor from replacement 3. Few viable vendors result in vendor lock-in 4. Asset specificity refers to systems that are built but have no other productive use within the outsourcing firm 5. Becoming stuck with standard services and paying more for custom 6. Potential loss of management control	1. Include penalty and incentive clauses in the contract to align vendor behavior 2. Hire an outside consultant to perform an independent verification and validation (IV&V) or audit function 3. Hire a professional IS project manager to manage both contract and vendor 4. Avoid proprietary technologies and employ mainstream technologies 5. Require vendor firms to specify all costs associated with transitioning services 6. Require the vendor firm to prepare a detailed transition plan

(*continued*)

Table AI.
IS outsourcing risk factors and associated management strategies

Risk category	Short description of the risk factors	Suggested risk management strategies
4. Vendor financial instability	1. Vendor financial instability leading to a willingness to shirk 2. Pursuing other, more profitable clients 3. Desperate vendor may abandon the contract-declare bankruptcy 4. Risk of becoming dependent upon a bankrupt organization 5. Number of qualified personnel employed by the vendor	1. Carefully consider a potential vendor's size and financial stability 2. Ensure that the vendor achieves an acceptable profit on the engagement 3. Place vendor source code in escrow in case of cessation of operations 4. Require immediate notification of material adverse developments
5. Vendor performance monitoring	1. Inability to completely specify the scope of work to be performed 2. Problems measuring vendor performance 3. Problems measuring system performance 4. Application of incentive and penalty clauses dependent upon measurement	1. Avoid signing incomplete contracts. Sign detailed contracts 2. Include incentive and penalty clauses in the contract 3. Specify outcome-based performance metrics rather than work-based 4. Prepare detailed estimates of the cost to manage the contract 5. Prepare a detailed project management plan
6. Contract horizon and technological discontinuity	Contract Duration impacts all aspects of risk: 1. Loss of skilled personnel due to turnover 2. Technological discontinuity – Technology becomes obsolete 3. Business or operating environment of the outsourcing firm 4. Viability of the vendor firm	1. Negotiate flexible contracts that can be renegotiated at specified intervals 2. Develop thorough technology transition plans with the vendor. Ensure that the vendor specifies replacement technology 3. Place vendor source code in an escrow account in the event of vendor bankruptcy
7. Loss of core competencies and proprietary information	1. Loss of core competence due to outsourcing key process areas 2. Loss of key personnel due to fear of career curtailment 3. If the vendor begins to perform core functions and processes: a) the vendor replaces the outsourcing firm in its domain; b) the vendor moves in a different direction 4. Natural disaster/catastrophic data loss	1. Take appropriate steps to retain key personnel and their specific knowledge within the organization 2. Make clear and distinct separations of IS activities and functions 3. Require binding non-disclosure and non-compete clauses within the contract 4. Work with the vendor to develop comprehensive plan for knowledge transfer 5. Prepare a detailed disaster recovery plan for all data that the vendor controls

Source: Adapted from: Sullivan and Ngwenyama (2005)

Table AI.

Appendix 2

Risk category	Excerpt from Texas Contract	Excerpt from Alberta Contract
1. Outsourcer experience	Assessment: fully specified "will be responsible for: a) providing the services; b) paying any amounts due with respect to the leased assets, licenses and contracts attributable to periods on and after the agency start date; and c) reimbursing the state for the base salary paid to and direct benefit costs for state employees supporting the operation of the data center and the data network during the transition period" (Texas Department of Information Resources, 1996) (Section 3.1 Transition Overview) "b) The state will have the right to approve the assignment and replacement by ISSC of all key personnel assigned to provide on-site ISSC representation, including, without limitation the overall project manager, individuals named or described in schedule O to this agreement, and individuals assigned significant managerial responsibilities as mutually agreed by the parties" (Texas Department of Information Resources, 1996) (Section 3.1 Transition Overview)	Assessment: fully specified "11.6.2 Phase-In Transition Pricing The proposal must include a fixed price to provide the transition services specified in section 9.5 and appendix D of this RFP including all components of the Vendor's proposed Phase-In Transition plan." (Alberta Ministry of Human Resources and Employment, 2002) (Section 11.6 Pricing Information)
2. Vendor exper.	Assessment: not applicable	Assessment: not applicable
3. Opportunistic behavior by vendor	Assessment: Adequately Specified e) No Gratuities – NGTSI has not given, offered to give, nor intends to give at anytime hereafter any economic opportunity, future employment, gift, loan, gratuity, special discount, trip, favor, or service to a public servant in connection with this Supplemental Agreement (Texas Department of Criminal Justice, 2001) (Section 17.22.e) h) Notifications – If any of the information provided in the above representations changes during the term of this Supplemental Agreement, NGTSI shall submit an updated representation as soon as is reasonably possible (Texas Department of Criminal Justice, 2001) (Section 17.22.h) c) Within 180 days after the Commencement Date, ISSC will provide a set of periodic reports to State. At a minimum, these reports will include the following: 1) A monthly performance report documenting ISSC's performance with respect to the Performance Standards; 2) A monthly project schedule report containing the information described in Section 4.5(b)(8); 3) A monthly change report setting forth a record of all Data Center and Data Network changes performed during the previous month; 4) A monthly report describing State's utilization of each particular type of RU during such month, and comparing such utilization to then applicable Resource Baseline for each RU; and 5) ISSC will provide the State with such documentation and other information as may be reasonably requested by the State from time to time in order to verify the accuracy of the reports specified above (Texas Department of Information Resources, 1996) (Section 4.5.c)	Assessment: moderately specified Access by Auditors 8.6 AHR&E shall have the right to appoint auditors, who may or may not be employees of AHR&E, who shall have access, at all reasonable times, and be able to make copies, upon two business days' written notice, subject to signing an appropriate confidentiality agreement, to the books, statements, accounts and records of the vendor relating to this contract. Such access shall be for the purposes of determining the Vendor' s compliance with the terms and conditions of this Contract, and for verification of all the AMS performed and all reimbursable costs and other charges payable under this Contract (Alberta Ministry of Human Resources and Employment, 2002) 3.2.4.4 Technology Evaluation: Ensure that new products or upgrades to existing products, hardware and Software, establish or reflect the standards currently in effect in AHR&E; Work to ensure that new products or upgrades to existing products are cost effective; Develop and implement process(es) for evaluating new products to provide consistency in testing; Work to ensure that new technology evaluations are driven by and responsive to the business needs of AHR&E; Develop and present to AHR&E the business case and corresponding recommendation resulting from the technology evaluation (Alberta Ministry of Human Resources and Employment, 2002)

(*continued*)

Table AII.
Excerpts from the Texas and Alberta contracts

Risk category	Excerpt from Texas Contract	Excerpt from Alberta Contract
4. Vendor financial stability	Assessment poorly specified NGTSI represents that it is not in default, nor is there any event in existence that, with notice or the passage of time or both, would constitute a default by the NGTSI under any indenture, mortgage, deed of trust, lease, loan agreement, license, security agreement, contract, governmental license or permit or other agreement or instrument to which it is a party or by which any of its properties are bound and which default would materially and adversely affect the NGTSI's ability to perform its obligations under this supplemental agreement (Texas Department of Criminal Justice, 2001) (Section 17.22 b. Representations, Certifications, and Other Statements of NGTSI)	Assessment: moderately specified Letter of Credit 1.15 Within ten (10) Business Days of Contract signature by the Vendor and AHR&E the Vendor shall provide AHR&E with an irrevocable, unconditional Letter of Credit ("Letter of Credit"). The Letter of Credit shall be in the form and from a recognized Canadian financial institution acceptable to AHR&E in the amount of $1,000,000.00 (Canadian funds), payable to the Minister of Finance of Alberta. Before any call can be made against the Letter of Credit for an alleged Vendor default under this Contract or if the Vendor is alleged to have not completed the contracted for AMS, AHR&E shall notify the Vendor of the anticipated call on the Letter of Credit and the parties shall have up to twenty-one days to attempt to resolve any disagreement. (Alberta Canada Office of the CIO, 1999)
5. Vendor performance monitoring	Assessment moderately specified The following are definitions for the pricing metrics included in this base contract. By linking the metric to user-controlled results (whenever possible), predictability and control are maximized. By minimizing the number of metrics, contract administration is simplified. (Texas Department of Information Resources, 1996) (Appendix B). The important consideration is to tie the metrics, whenever possible, to the resources directly controlled by the client. This ensures that price tracks closest to user-defined value (Texas Department of Information Resources, 1996) (Appendix B)	Assessment: adequately specified There are two types of Service Levels: Those that are Credit Point based are linked to Schedule 6 of the Contract (Pricing, Payment and Credits) and are included at the back of this Schedule Those that are Report based. This Schedule provides a list of those Service Levels, which the Vendor will monitor, and report to AHR&E on a monthly basis The Service Level Reports are categorized as follows: 1) Customer Satisfaction; 2) Applications; 3) Security violation; 4) Staff availability.(Alberta Canada Office of the CIO, 1999)
6. Contract horizon and technological discontinuity	Assessment adequately specified In the event that Texas's use of the Resource Units, as specified below, increases or decreases, ("Change"), or, if in Texas's judgment, Texas's use of such RUs will Change and such Change is expected to continue for the foreseeable future, then Texas may elect to have ISSC set the applicable Baseline(s) to the new actual or anticipated resource usage level and adjust the Annual Services Charge. (Texas Department of Information Resources, 1996) (Section V1 Baseline Adjustments)	Assessment: fully specified 3.2.4.4 Technology evaluation 1) Ensure that new products or upgrades to existing products, hardware and Software, establish or reflect the standards currently in effect in AHR&E 2) Work to ensure that new products or upgrades to existing products are cost effective 3) Develop and implement process(es) for evaluating new products to provide consistency in testing 4) Work to ensure that new technology evaluations are driven by and responsive to the business needs of AHR&E 5) Develop and present to AHR&E the business case and corresponding recommendation resulting from the technology evaluation.(Alberta Canada Office of the CIO, 1999)

(*continued*)

Table AII.

Risk category	Excerpt from Texas Contract	Excerpt from Alberta Contract
7. Loss of competency and data	Assessment moderately specified (Vendor) will present relevant information and training as necessary regarding the use and functions of new products and Services to employees designated by Texas prior to implementation (Texas Department of Information Resources, 1996) (Section III – Application Support Services)	Assessment: moderately specified SECURITY, ACCESS AND CONFIDENTIALITY 8.1 a) The Vendor, and the Vendor's Personnel shall, subject to any Confidentiality Legislation requirement: (i) not use, copy or disclose, except as necessary for the performance of the AMS or upon written authorization of AHR&E, any AHR&E Confidential Information; (ii) adhere to security standards for AHR&E Confidential Information, including control of access to data and other information, using the same care and discretion AHR&E follows for its own Confidential Information, as specified in this Contract. AHR&E shall provide the Vendor with notice of any changes to these standards. If changing the security standards for AHR&E Confidential Information increases the Vendor's costs the Vendor may submit a Change Request

Table AII.

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