

**Contracting and Partnerships in IT Services to Government**

A paper for the

Panel on the Role of Government

By

**Sandford Borins,**

**Professor of Public Management,**

**University of Toronto**

And

**Scholar-in-Residence,**

**Cabinet Office,**

**Government of Ontario**

October 2003

The research assistance of Danielle Katic is gratefully acknowledged.

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## **Executive Summary**

Given how much governments spend on IT, they ought to be concerned about how to acquire technology as efficiently as possible. IT includes desktop and laptop computers and printers, mainframes and servers, network management, help desks, website development, and business reengineering projects. The greatest problems have occurred with reengineering projects and they are the primary focus of the report.

The report demonstrates that all the other areas of IT procurement are not as difficult because their markets tend towards low complexity, high contestability, and low asset specificity. Specifically, personal computers, basic software, and even systems and servers are becoming standardized commodities with numerous competing producers. The availability of many people with the requisite skills facilitates staffing help desks and web development positions internally. Strong interest in the [www.gov.on.ca](http://www.gov.on.ca) website on the part of the government of the day is another reason for internal production.

Business reengineering projects tend to be so difficult to manage because they are characterized by high complexity, low contestability, and high asset specificity. There is a good deal of evidence that both the public and private sectors have had difficulty in delivering such projects on budget, on time, and with full functionality.

The paper examines four case studies of large IT projects in Ontario. Despite a nine-month delay in implementing the electronic tolling system, Highway 407 was a great success, producing a large profit for the government. Key success factors include an effective monitoring regime, incorporating skills from the private sector where necessary; high-level bureaucratic and political commitment; and good risk analysis.

The integrated justice project was over budget and failed to produce anticipated benefits. Its key problems included having too complex a set of clients, resistance to change on the part of staff who would lose their jobs to technological change, and software requirements that were too detailed and complicated to implement.

The business transformation project was consistently criticized by the Provincial Auditor, but we conclude that these criticisms were inappropriate and the project did demonstrate benefits. While the project had some difficulty getting on track and was restructured to incorporate more input from consultants than had been planned, it ultimately delivered a benefit stream that substantially exceeded its costs. Key success factors include the development of a strong business case, underpinned by quantitative analysis; the use of the critical path method for planning and management; tight financial control; and the establishment of clear lines of accountability for project managers.

Teranet is a public private partnership with a mandate to automate Ontario's land registration system. The project has been somewhat over budget and delayed relative to its initial plans. It has nevertheless converted a substantial portion of the records, the legal community is satisfied with it, it has won numerous awards, and it has developed new software and exported technology and expertise to overseas governments. The government recently sold its share to the private sector partner and appears to have made a modest profit.

The report concludes with an examination of these cases and other relevant literature to derive a formula for effective management of large IT projects. The formula includes having a clear business case, based on quantitative analysis; incorporating risk analysis into plans for and ongoing management of the project; including incentives and

penalties in contracts with the private sector; developing a project management team with the necessary skills, often recruited from the private sector; having project champions in senior management; and maintaining close communications between the project team and prospective users, on one hand, and private sector contractors, on the other.

The paper compares contracting-out (Highway 407) with common purpose procurement (integrated justice and business transformation projects) and concludes that contracting-out is preferable. The requirement of common purpose procurement that contractors, who are usually management consultants with little working capital, finance development costs induces them to continuously attempt to shift financial risk back to the government. In addition, the agreement to share the benefit pool in proportion to the cost pool creates a perverse incentive for the consultants to inflate costs, in terms of both price and days worked. Contracting-out reduces the financial risk, eliminates the perverse incentives resulting from the use of cost and benefit pools, and could incorporate various incentives, including benefit-sharing, for private sector contractors to control cost and meet deadlines.

## **Introduction**

Information technology (IT) has come to play an increasingly important role in the work of government. Ten percent of spending on the operations of government, approximately \$ 5 billion at the federal level, is accounted for by information technology – hardware, software, and operating costs. Given purchases of this magnitude, governments ought to be concerned about how to acquire technology most efficiently. This paper, therefore, deals with three alternative methods of acquiring and operating technology: public-private partnerships as embodied in the Ontario Government's common purpose procurement policy, contracting-out, and internal production.

Information technology is a catchall phrase for a number of different goods and services including: desktop and laptop computers and printers, mainframes and servers, network management, help desks, website development, and business reengineering projects. The greatest emphasis will be placed on business reengineering projects, because these are the most complicated and have experienced the most notable problems and occasional failures. Before considering business reengineering projects, the paper will present a brief discussion of the other areas of IT, explaining why they do not seem to be equally problematic.

The focus on business reengineering leads to four case studies of major projects undertaken in the last decade by the Ontario Government. These are electronic tolling for Highway 407, the integrated justice project, the Ministry of Community, Family, and Childrens' Services business transformation project, and the Teranet partnership. The four cases display considerable diversity in organizational structure. The development of Highway 407 was an instance of contracting-out, with two large contracts managed by a

Crown corporation created for that purpose. The integrated justice and business transformation projects were both public-private partnerships in which it was intended that the private sector partner would share in the savings achieved. Teranet was a long-term partnership between government and a private sector consortium, in which government recently sold its interest. The cases also involve a variety of outcomes: Highway 407 was very successful; the integrated justice project was terminated before completion; both the business transformation project and Teranet partnerships cost more than expected, but achieved considerable results.

Based on the examination of these four cases as well as international experience in the management of large technology projects, the paper draws conclusions regarding the management of large IT projects in Ontario.

### **Problem-Free IT?**

Globerman and Vining's (1996) framework for analyzing procurement decisions, cited by Hrab (2003, pp.16-9) in his background study, identifies three main environmental factors that affect the cost faced by the public sector in contract with the private sector: complexity, contestability, and asset specificity. The two polar cases in this framework are low complexity, high contestability, and low asset specificity, on the one hand, and high complexity, low contestability, and high asset specificity, on the other. The former is the government's most desirable case. Low complexity implies that the government has sufficient knowledge to specify contract terms precisely, and high contestability and low asset specificity mean that inefficient or opportunistic contractors can quickly be replaced. The latter is the least desirable case for government because it

will have difficulty specifying outcomes and because there are few potential bidders. Conversely, bidders are concerned about the possibility of opportunism on the part of government because the assets they produce will have little value to anyone other than the government. The solution Globerman and Vining (1996) sketch involves quasi-integration between the government and the contractor. Ontario's experience with this approach will be discussed in the case studies.

It is our contention that, in many areas of IT, the environmental factors approximate, or have been moving towards, the most desirable case. The dot-com collapse of 2000 and subsequent reduced growth for a variety of the IT sector's products means that the IT sector has excess capacity, both in terms of people with appropriate skills ("IT professionals") and in terms of manufacturing capacity. Furthermore, some of the IT sector's products such as PCs have become increasingly standardized, with the consequence that they can be described in terms of a small number of variables (for example, speed and hard drive capacity) and can be assembled by a large number of producers. Industry overcapacity and product standardization have made life easier for public sector procurement managers than was the case even three years ago. Consider the implications of these trends for a number of areas of IT procurement faced by the Government of Ontario.

**Personal (desktop or laptop) computers and basic software** are now standardized commodities, with the computers themselves produced by a variety of manufacturers and operating systems and office software dominated by Microsoft. The Government of Ontario is a large purchaser of PCs and basic software and can achieve substantial volume discounts. Retail prices are posted every day in newspaper advertisements. Given

the three-year life span of both hardware and software, mistakes can be corrected in short order. The Government of Ontario is thus comparable to many other large organizations, both public and private, when shopping for PCs and software. It has chosen to lease its computers and software; if it is unhappy with the performance of its current provider, it will have many other bidders, and, ultimately, it could purchase computers and software itself. This is not to say that IT procurement is a trivial exercise; for example, different computer and software vendors have different pricing models, requiring procurement managers to develop methods for making comparisons (Sentance, 2003).

**Help desks**<sup>1</sup> rely on the availability of individuals with the necessary computer skills. As discussed above, the dot-com collapse and IT industry recession have released many people with the appropriate skills; the essentiality of computers to students means that the schools are graduating large numbers with the appropriate skills every year. Staffing help desks, therefore, should not be at all problematic for the Ontario Government, or indeed for most other governments. Some parts of the OPS contract out help desk functions while others recruit individuals into the public service. The coexistence of both approaches makes it easy to compare costs and performance and, if so desired, to move from one to the other.

**Systems and servers** are the backbones on which the government's PCs operate, handling functions like e-mail, financial management, human resource management, and

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<sup>1</sup> Help desks are advisers available on demand to assist staff with computer problems, such as malfunctioning hardware or use of software.

databases.<sup>2</sup> These functions are more complicated than personal computers and basic office software and it is likely that their pricing models are also more complex. The performance characteristics of networks can nonetheless be specified and monitored, and there are a large number of providers of servers and network or systems software. Thus, the Government of Ontario is one of many large organizations that purchase servers and networks. Its network services are contracted out to EDS Canada, the wholly-owned Canadian subsidiary of the Texas-based computer services corporation founded by H. Ross Perot; when the time comes for contract renewal, we would expect many other providers to be interested. The Government of Ontario, however, owns the actual servers. It has likely chosen to do that because, both for purposes of negotiations with suppliers and public perceptions, it does not want individuals' records or its own operating data to be stored on machines that are privately owned.

**Website development and management** depends on two factors, software for creating websites and the supply of webmasters. There are several standard inexpensive software packages now available for creating websites as well as more complex packages

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<sup>2</sup> While I am writing this paper on a desktop computer leased by the government, the paper itself is being stored on a server that is part of the government's network, and I have been advised by the public servants working at the Cabinet Office help desk that data on the network is constantly backed up and protected and hence more secure than if it were stored on the desktop itself.

for managing portals<sup>3</sup>. The dot-com collapse in particular released many people with web development skills and the schools are graduating many more. Given the characteristics of this market, government could readily contract out web site development or do it internally. The Ontario Government and, it would appear, many others, have chosen to handle web development internally – that is, hiring webmasters into the public service – because they are seeing their web presence as a core function. Government websites are involved in the dissemination of both bureaucratic and political information and are used for an increasing number of transactions.

The Ontario Government is attempting to standardize its website, in the sense of creating a common look and feel for all departmental websites. Much of the website is organized on the basis of issues, demographic groups, or life events, rather than departmental mandates. Politicians have come see the [www.gov.on.ca](http://www.gov.on.ca) website as a key aspect of the face of the Government of Ontario. Premier Eves had a strong presence on the home page, with a Premier's Page sidebar on the right, and most news stories in the middle mentioning either Premier Eves or the Eves Government.<sup>4</sup> In addition, major changes in the home page were approved by the Premier. At the time of writing – during

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<sup>3</sup> The more complex and expensive the web development software, the less technical knowledge (e.g., HTML) is required to create websites, so there exists a tradeoff between investment in software and in people.

<sup>4</sup> Premier Eves is much more visible on the [www.gov.on.ca](http://www.gov.on.ca) home page than Prime Minister Chretien on the [www.gc.ca](http://www.gc.ca) home page. One might attribute this difference to the imminent election Eves faces and the imminent retirement Chretien awaits.

the transition between the Eves and McGuinty Governments – it remains to be seen whether Premier-designate McGuinty will follow a similar approach.

Website development could be compared to two other government activities in the public relations sphere – media relations and advertising. Advertising is for specific purposes and always contracted out. Governments maintain a capability to manage advertising, but have never created the capacity to produce their own. On the other hand, media relations is an intrinsically internal function, with ministers retaining press secretaries and spokesmen who are either political staff or public servants. Website development is now clearly closer to media relations than to advertising. Furthermore, Ontario's push to creating a common look and feel and a website presentation that cross-cuts departmental lines argues for central management of website development by the Office of the Corporate CIO, rather than more decentralized departmental management and possible contracting-out.

### **Procurement for Business Reengineering Projects**

These projects arise out of either necessity or opportunity. In many instances (for example, air traffic control) legacy systems using outdated software operating on mainframe computers have reached the end of their useful life and must be replaced. In other instances, politicians and public servants see the potential for reengineering to improve performance and reduce cost in a particular policy area. Integrated case management has a particularly strong appeal in terms of increasing efficiency or improving service quality.

These projects entail the acquisition of specialized hardware and/or software systems. Large upfront investments are required, with the hope that operating costs will be reduced and/or service improved relative to the legacy systems. There are two key challenges in making these investments. The first is that governments will be stretched to find the funds for the initial investments if they are already running deficits, as was the case for Ontario in the Nineties. This provides a rationale for public-private partnerships in which the private sector assumes a share of the initial investment. The second is that government does not have the technical expertise to build these complex systems. They must be contracted out, yet there are few actual or potential suppliers. From the supplier's point of view, because of the unique institutional and legislative context of any such project, there is little that can be transferred from one project to another. These projects thus display the three characteristics of Globerman and Vining's worst-case scenario: high complexity, low contestability, and high asset specificity.

Not only have these projects been difficult to structure and negotiate ex ante, but their performance ex post has also been problematic. The Standish Group, an IT consultancy, has tracked the performance of large IT projects, a definition that includes many business reengineering projects, for almost a decade. Its initial 1995 study of 8400 projects in the public and private sectors in the US found that only 16 percent were successful (that, is completed on time, within budget, and with full functionality); 31 percent were cancelled; and 53 percent were compromised, in that they were late, over budget, or delivered less than full functionality. A subsequent study of IT projects in the US in 2000 found that the situation has improved somewhat, as 28 percent were successful; 23 percent were cancelled; and 49 percent were compromised. Its 2003 report

considered 13,5000 IT projects, and found additional improvement, with 33 percent that were successful, 50 percent that were compromised, and 17 percent that were cancelled. ([www.standishgroup.com](http://www.standishgroup.com)).

The Organization for Economic Co-operation and Development (OECD) held an expert meeting on managing large public IT projects in October 2000, hearing reports from eleven national governments, including Canada, the US, and the UK. The meeting concluded that project management problems on a scale and frequency identified by the Standish Group pose a major challenge to implementing e-government plans (OECD, 2001).

The most recent governmental report about IT projects, issued by the UK's Parliamentary Office of Science and Technology ([www.parliament.uk/post](http://www.parliament.uk/post)) in July 2003, observed that the UK government has 100 major IT projects underway, with a total value of 10 billion pounds, and noted that there have been difficulties affecting projects in the Child Support Agency, Passport Office, Inland Revenue, and National Air Traffic Services. The report contrasted public and private sector IT projects and found that those undertaken by the public sector have multiple, rather than single, goals, greater public accountability, more public visibility, a more risk averse culture, and, finally, a political environment that can rapidly change policy affecting the project. Despite these concerns, the OECD and UK reports made proposals for improving the performance of large IT public sector projects. These will be discussed following the case studies.

While the challenges involved in managing large IT are substantial, it is important to retain perspective. By the Standish Group's own measures, performance has improved over the last decade. In addition, we question whether its measures of success and failure

are even appropriate. The essential problem is that they are defined in supplier terms, rather than in terms of the interaction between the project's value to end users and cost to produce. It is possible to have a project delivered on time, on budget, and with full functionality that does not gain user acceptance. Conversely, a project could be over budget, late, and delivered with less than full functionality but still accepted by users. A framework that more effectively takes into account both value to users and cost to producers is net present value. This will be relevant to the case studies below.

## **Case Studies**

This section presents four case studies of large IT projects in Ontario, Highway 407, especially its electronic tolling system; the integrated justice project; the MCFCS business transformation project, and Teranet. Each case study is described chronologically, with reference made to relevant themes in Hrab's (2003) paper.

### **Highway 407**

The rationale for Highway 407 was to reduce congestion on east-west roads in the north of the Greater Toronto Area. Land was set aside for this highway in the Seventies, and construction began in 1987. If the highway were built in accordance with the Ministry of Transport's (MTO) normal process of giving small contracts using the limited funding available in its annual capital budget, the first 69 kilometre segment of the highway, between Highways 410 and 48, would not have been completed until approximately 2021. Given the severity of the congestion problem, the Rae government sought to speed up the construction process. The recession of the early Nineties and

resulting deficits meant the government could not afford to pay for the highway itself and operate it as a freeway. Rather, the Government decided to build Highway 407 as a toll road, using new electronic technology.

The government issued a request for qualifications in 1993 and chose two Ontario-based consortia to prepare proposals. The RFP that followed asked them to submit three part proposals encompassing the highway, the tolling system, and financing. The components were not bundled, so that the government could choose the best parts of each package. Ultimately, the government chose the highway from one consortium and the tolling system from the other. The winning highway consortium, Canadian Highways International Corporation (CHIC), produced estimated savings of \$ 300 million relative to MTO's own design. Part of the savings came from eliminating or delaying nine planned interchanges that CHIC considered unnecessary (Hrab, 2003, p.66). In addition, CHIC proposed a concrete highway (rather than asphalt proposed by its competitor) and priced the concrete very attractively.

The winning tolling consortium included Hughes Aerospace (automobile identification hardware), Bell Canada and Bell Sygma (software), and Mark IV Industries (transponders). The system therefore met the government's specifications, namely that it would be automated and would accommodate occasional users.

Both consortia requested government loan guarantees to finance the highway. As noted by Hrab (2003, p.65), had the government permitted foreign participation in the bids, the financing packages proposed might have been more attractive. Rather than giving guarantees, the government decided to finance the highway by borrowing itself, which it could do at rates lower than the private sector. Because the highway was to be a

self-financing toll road, the capital markets treated its debt as off-book, so it was not included in Ontario's public debt. The Provincial Auditor (1996) criticized this approach to funding because "the government's ownership, operational, and financial responsibilities are so significant compared to the contractual risks assumed by the private sector that, in our opinion, a public-private partnership was not established." Similarly, according to Hrab's (2003, p.5) definition of public-private partnership, which "typically includes private sector financing," Highway 407 was not a public-private partnership.

Since the highway was to be built using two master contracts, the government departed from its normal contract monitoring regime. The Ontario Transportation Capital Corporation (OTCC) was established as a Crown corporation responsible for monitoring the contractors and operating the new highway when it was completed. OTCC had a small staff of approximately 40, some of whom were seconded from MTO, with specific expertise in transportation engineering and project management. The CEO, Dennis Galange, was an MBA and accountant with experience in transportation, hired from the private sector. As the highway approached completion, OTCC added marketing expertise. OTCC used third parties to monitor construction of the highway as well as the development and construction of the tolling system.<sup>5</sup> While the government, represented by the minister of transportation, was the sole shareholder in the highway, OTCC had a mixed board composed of four public sector directors (the deputy ministers of finance

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<sup>5</sup> Hrab (2003, p. 66) notes that highway construction was monitored by an independent engineering consulting firm that charged 1.5 percent of the highway's total cost, rather than the 8-10 percent standard for ministry contracts.

and transportation, the CEO of OTCC, and the ADM of MTO responsible for planning) and five external directors with expertise in capital markets, project management, public policy, and the trucking industry. The board met on a regular basis, more frequently than the typical Crown corporation, and risk management was one of its main concerns. Every meeting included a risk management report that identified the major risks, their severity, their likelihood, and outlined measures that could be taken to mitigate each risk. To emphasize its distinctness, OTCC's offices were in Toronto's financial district, rather than either Queen's Park or MTO's head office in Downsview.

Highway construction was within budget and on time for a targeted opening of January 1, 1997. The only problem came in late 1996 when a number of OPP officers criticized the highway's safety features, in particular the absence of centre guide rails in its grassy median strips and of protective barriers around light standards. These criticisms were publicized by both the Ontario Liberals and *The Toronto Star*. The safety concerns led the government to commission the Professional Engineers of Ontario to conduct a safety review. The review reported in April 1997 and concluded that, while the highway met Ontario's current safety standards, a number of modifications would improve safety. MTO and OTCC costed the modifications at approximately \$ 15 million, which was not substantial in comparison to the \$929 million highway construction contract and well within the \$ 30 million construction contingency fund OTCC had established.

The electronic tolling work fell behind schedule in fall 1996. As a result, OTCC stepped up its monitoring of the consortium by requesting weekly reports and having the deputy minister and/or minister of transport phone or meet with the presidents of the contractors. One solution was to increase the number of people the contractors assigned

to testing and debugging software. The contract specified a deadline of January 1, 1997, and, when the consortium did not meet it, it began paying monthly penalties of several hundred thousand dollars. Following its risk management framework, OTCC developed and kept refining contingency plans.

After the safety features had been installed in the spring of 1997, the highway was ready to open without the tolling technology. It was becoming increasingly difficult for the police to keep drivers off the highway. Transportation Minister Al Palladini, who came to politics with a background in marketing, urged Cabinet to open the highway for a promotional free use period. When the highway opened in early June, the traffic volume of 300,000 trips per day was much higher than the 100,000 trips per day anticipated with tolling in place. The opening of the highway put enormous pressure on both the consortium and the government to introduce the tolling technology. The consortium was concerned about its international reputation as a developer of leading edge tolling technology; the government was concerned because, if the tolling technology did not work, the capital markets would add OTCC's off-book debt to Ontario's public debt.

The higher volume of traffic exacerbated the problems of bringing the new technology on line. The uncertainty about when tolls would be imposed created no incentive for drivers to obtain transponders. When the tolling system went live, the computer capacity to process videoimages would immediately be swamped during morning rush hour. OTCC took an extremely risk-averse position, which is that it would not charge tolls until it was certain it had enough videoimaging capacity for the traffic levels experienced during the free use period. OTCC asked the contractor to double videoimaging capacity, which added \$ 15 million to the \$ 72 million cost of the

technology. The consortium was finally able to show that it could track and bill over 300,000 trips per day, the vast majority of which were not using transponders. Highway 407 went into operation as a toll road on Thanksgiving Day, Monday October 14, 1997. The traffic level fell overnight to the predicted 100,000 trips per day, almost immediately 50 percent of the drivers began using transponders, and the technology worked without any significant problems.

In the ensuing months, Highway 407 proved itself to be a great success. Within a year, the traffic level grew to approximately 150,000 vehicles per day. The transponders were virtually 100 percent effective and videoimaging captured over 90 percent of vehicles without transponders. The highway's safety record was better than that of any other 400-series highway. The government decided to privatize the highway prior to the 1999 election, and in April 1999, a consortium of SNC-Lavalin Group, Caisse de depot et placement du Quebec, and Gruppo Ferovial (Spain's second-largest construction company), paid \$ 3.1 billion for a 99-year lease on the highway. The total construction cost of the highway (including segments built previously by the government) was \$ 1.5 billion, so the government made a profit of \$ 1.6 billion by privatizing it. The Provincial Auditor was correct that there had not been a partnership; however, the result was fortuitous for the Government. Because it had assumed all the risk in building Highway 407, it was in a position to receive all the profits.<sup>6</sup> From the Standish Group's point of

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<sup>6</sup> Whether the government, in fact, received the net present value of all the profits when it privatized the highway is another matter. Critics of the privatization argued that the government for ideological reasons was intent on privatizing a major public asset before the election and, to balance the budget, wanted the sale to bring in as much money as

view, however, the project was challenged because the tolling system was put in place 9 ½ months late and was over budget; in contrast, it was a great success in terms of the net present value realized by the government.

### **Integrated Justice Project (IJP)**

According to Michael Jordan, the CIO for the justice cluster at the time IJP was initiated,

Integrated justice's vision is therefore a justice system that uses information technology (IT) to enable needed reforms in civil procedure, work-flow management, and case-management practices among all the justice partners . . . . . The vision of Ontario's IJP is to transform the separate paper-based information silos into a seamless network of information that links the justice system electronically end to end (Jordan, 1999, pp. 29-30).

The public sector partners in the project encompassed three provincial ministries (the Ministry of the Attorney General and the then Ministries of the Solicitor General and Correctional Services, now the Ministry of Public Safety and Security); the police; the court system; the crown attorneys' system; and the correction system. Some of the computer systems in the project were computer-aided dispatch and records management

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possible. Thus the government was maximizing its immediate return at the expense of its long run return. Critics have also suggested the government should have chosen a shorter lease than 99 years and should have retained a financial interest in the highway to benefit from future increases in its value. The fact that SNC-Lavalin sold a 6 percent interest in the highway, for which it paid \$ 45 million in 1999, for \$ 178 million in 2002, indicates that the value of the highway had increased substantially in three years (Mackie, 2002).

Exploring this issue is beyond the scope of this report.

for the police; case management for Crown attorneys; case management, court scheduling, electronic document filing, and digital audio recording of court records for the courts; and an offender tracking and information system for corrections (Provincial Auditor, 2001, p. 68). The expected benefits included a reduction in inefficiency and delay in the court system (and hence a reduction in costs to both government and users), an increase in the accessibility and responsiveness of the justice system, and an increase in public safety and security.

The Ontario Government instituted its Common Purpose Procurement (CPP) policy in 1995 and IJP was one of its first applications. According to this policy, a ministry may seek out private sector partners for large, multi-stage, design-build-and-operate projects which it does not have the expertise and resources to complete internally. Both the ministry and its partner must be capable of financing their investment costs in the project. Essentially, this means that the private sector partner must pay its salaries and expenses before being reimbursed by the government and, if the project fails to deliver more benefits than costs, the private sector partner will not be fully reimbursed. Benefits occur when there are costs savings and new revenues as a result of the project, and they are to be paid to each partner in proportion to its investment (Provincial Auditor, 2001, p. 72).

A number of practices are followed to implement this approach. Unlike traditional vendor selection on the basis of a detailed bid containing an ultimate price, CPP employs a two-stage process. In the first stage, an oral interview (also referred to by bidders as a “beauty contest”), bidders are evaluated on the basis of their relevant experience and expertise, capability to finance their costs, willingness to share risk, and their approach to

delivering the project (Provincial Auditor, 2001, p. 73; Jordan, 1999, p. 33). Once a bidder has been selected, it enters into detailed negotiations with the government to develop a business case for the project and translate that into a legal contract. Some of the issues dealt with in the contract include:

- methodology for calculating benefits
- the per diem rates that the public sector and private sector partners charge the project
- incentive payments to the private sector partner to meet project milestones
- a cap on payments to the private sector partner, intended to set a ceiling for costs as well as to limit payments if benefits are substantially more than anticipated
- termination protocols, for example if a successor government chooses to cancel the project (Provincial Auditor, 2001, pp. 72-3; Jordan, 1999, pp. 35-7).

### *History*

The IJP selection process was launched in August 1996, oral interviews were held for two qualified contenders in November, and one, a consortium of SHL Systemhouse, IBM Canada, DMR Canada, KPMG Canada, and Teranet, was selected in January 1997. The government set a ninety-day deadline (May 22, 1997) to negotiate the contract. IBM Canada, which had led the consortium, reduced its commitment to that of a junior member because it felt the government was not allowing enough time to reconfirm the business case. Given the subsequent performance of the project, IBM felt this was a good decision (Morine, 2002). IBM's place as leader of the consortium was taken by Systemhouse. The contract was ultimately signed on September 8, 1997. After

Systemhouse was acquired by EDS Canada, the contract was revised in March 1998. At that time, total project costs were estimated to be \$ 180 million, to be recovered through estimated benefits of \$ 326 million. The computer systems were to be completed by August 2002 and the period for receiving benefits would extend to August 2005 (Provincial Auditor, 2001, p. 68).

A Project Management Office was established in 1997, with two directors, one representing the government and the other chosen by EDS. A joint operations team of ministry and contractor staff was responsible for implementing the project. The project's executive steering committee, composed of representatives of all justice system and private sector stakeholders, acted as a board of directors (Jordan, 1999, p. 39).

The project experienced significant cost overruns and delays. By March 2001, estimated costs had risen to \$ 359 million, benefits had been reduced to \$ 238 million, and not all systems were expected to be completed by the contractual deadline of August 2002 (Provincial Auditor, 2001, p. 69). The two ministries involved began a renegotiation of the agreement with EDS. After a year, they were unable to reach an agreement and the work term expired on October 8, 2002 (*Toronto Star*, October 9, 2002).

### *Critique*

The Provincial Auditor's critique of the Integrated Justice Project in his 2001 Annual Report was based on the assumption that perverse incentives were at work, namely that "there is pressure on project management, in preparing the business case, to minimize costs and achieve benefits as early as possible in order to obtain Management Board approval for the project" and that "even though risks ... were identified in early

submissions regarding the Project made to the Management Board of Cabinet between 1996 and 2000, aggressive timelines and favourable cost scenarios were nonetheless used in the business case” (Provincial Auditor, 2001, pp. 72, 77).<sup>7</sup> According to the Provincial Auditor, one factor explaining the doubling of estimated costs from \$ 180 million in 1998 to \$ 359 million in 2001 was that the project did not meet its original timetable. Project management’s plan to introduce all its new systems and procedures in the court system was resisted by court staff and judiciary; securing their cooperation required extensive consultation and increased implementation costs. According to the Auditor, project management also underestimated the time and work needed to customize, develop, and test systems software (Provincial, Auditor, 2001, pp. 76-7).

The Auditor cited a number of factors leading to the downward revision of the estimate of benefits from \$ 326 million in 1998 to \$ 238 million in 2001. Savings in the court system were reduced by \$ 15 million because staff reduction targets were made more conservative, at least in part due to staff opposition. Estimated revenues of \$ 10.5 million to be collected for the project from the police as a payment for improved information were cancelled when it was agreed that, because the police were contributing such information to the system, they should not be paying for sharing it (Provincial

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<sup>7</sup> One check on this tendency is that private sector firms might be wary of a prospective partnership that overstates benefits because, if the benefits do not materialize, the firm would not recoup all its costs. This would appear to explain why IBM relinquished its leadership role.

Auditor, 2001, p. 80).<sup>8</sup> It would appear that police savings that were reallocated within the police system were not counted as savings by the project, even though they would have been considered as such by an economist. While reduced benefits had been finalized and accepted for the police, Crown attorneys, and corrections by June 2000, the Ministry of the Attorney General had not accepted the expected benefits for the courts by mid-2001, when the Auditor wrote his report; this delay was critical because court benefits represented over 70 percent of IJP's projected benefits (Provincial Auditor, 2001, pp. 79-80).

The project was recently reviewed by Ray Hession, a former deputy minister of Supply and Services Canada. He, too, was critical of the methodology for determining benefits for the courts, arguing that the business case regarding benefits for the courts was weak. Hession felt the Ministry of the Attorney General, in attempting to apply case management to the court system, set out requirements that were too detailed and complex for software developers and consultants to implement (Hession, 2003).

A third area that the Provincial Auditor criticized was the per diem rates charged by the private sector partners as compared to those charged by the government. The relative rates used have an important implication for the costs attributed to each of the two parties, and hence the share of benefits attributed to it. The private sector partners, as consultants, have substantial experience attributing overhead to their per diems, and

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<sup>8</sup> The reduction in benefits attributed to the police was predicted by Professor Carl Baar, one of the IJP's critics, who wrote in 1999 that, as a result of provincial downloading of costs to municipalities, local police would likely resist any attempt to identify benefits that would require them to return revenues to the province (Baar, 1999, p. 58).

could be expected to build in as much overhead as possible.<sup>9</sup> The Auditor compared EDS's per diem rates for IJP with those it charged for projects on a fee-for-service basis with competitive bidding, and found that rates for IJP were 30 percent higher. The Auditor estimated that the higher rates added \$ 20 to \$ 25 million to the cost of the project (Provincial Auditor, 2001, p. 84). The private sector rates were three times higher than those of public servants, and the Auditor concluded that this differential was neither documented nor justified (Provincial Auditor, 2001, p. 85).

The government's responses to the Auditor's criticisms are always presented in the Auditor's reports. It is interesting that in the case of IJP, the government in every instance conceded the Auditor's point. While there is no legal obligation for the government and the Provincial Auditor to reach agreement on issues, I interpret the evidence to show that the Provincial Auditor, the government, and Ray Hession, the government's key consultant on procurement, all were of the view that IJP had not delivered promised benefits. The problems appeared to be in the identification of benefits for, and implementation of case management in, the courts system and project management, including both cost control and meeting deadlines.

## **Business Transformation Project**

### *History*

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<sup>9</sup> As will be discussed below, Hession also evaluated the business transformation project, and in that context argued that charging high overhead rates is one way consultants attempt to cover their risks in such projects (Public Accounts Committee, December 16, 1999, pp. 12-13).

The Ministry of Community, Family, and Children's Service's (MCFCS) two major social assistance programs, family benefits and general welfare assistance, were supported by two large centralized computer systems that were developed in the late Seventies and early Eighties.<sup>10</sup> The systems had become obsolete and had reached capacity by the mid-Nineties. The Harris Government replaced family benefits and general welfare assistance with the Ontario Works Program (OWP), which integrated employment and financial assistance for employable recipients, and the Ontario Disability Support Program (ODSP). These new programs also increased the need for new technology (Provincial Auditor, 1998, pp. 31-2). This case thus illustrates both the technology and policy change rationales for undertaking a reengineering project.

The ministry decided to apply the Common Purpose Procurement (CPP) approach to this project. It requested written proposals in October 1995, received seven submissions by the deadline of December 4, 1995, chose three for oral presentations on January 31, 1996, and selected Arthur Andersen Consulting (now Accenture) in April 1996.<sup>11</sup> On January 27, 1997 Accenture and MCFCS entered into Ontario's first CPP agreement (several months before the IJP). The key terms of the agreement included:

- a four-year term, with the possibility of a one-year extension
- a cap on payments to Accenture of \$ 180 million (excluding hardware, third-party software, production support and helpdesk services, and taxes)

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<sup>10</sup> At the time the project started, the Ministry was known as Community and Social Services (MCSS). The current name and acronym (MCFCS) will be used in this report.

<sup>11</sup> The current name, Accenture, will be used throughout the report.

- costs for both parties to be charged to a common cost pool, with interest also chargeable by both parties
- each party to draw on the benefits pool in proportion to the costs and interest it had charged to the cost pool, and
- unless otherwise agreed to, no distribution of benefits to occur until benefits exceed total costs (Provincial Auditor, 1998).

BTP intended to achieve its objectives by developing tools such as a computerized system for reviewing eligibility for OWP and OSDP, a system for screening persons applying for social assistance through call centres prior to scheduling in-person office visits, an automated telephone system for program recipients, and automated case management hosted on the ministry's website (Daniels and Ewart, 2002).

The Provincial Auditor first reported on BTP in 1998, based on information gathered up to March 1998, slightly longer than BTP's first year of operation. The report was highly critical; unlike IJP, MCFCS officials attempted to rebut these criticisms both in the responses included in the report and in testimony before the Public Accounts Committee of the Legislature. As will be discussed below, there were several rounds of criticism and response and ultimately no agreement between the auditor and the ministry. Like IJP, disagreement focused around the justification for costs and the measurement of benefits.

The Auditor's major criticisms in 1998 were that the ministry had not assessed whether the project's results would be sufficiently attributable to Accenture's work or sufficiently measurable to establish benefits clearly; that the ministry had not adequately considered alternative ways of achieving the desired benefits; that the ministry had agreed to pay Accenture's standard billing rates, which were 65 percent higher than the

rates Accenture quoted in the 1995 RFP and which also were six times higher than rates the ministry would be charging the project; and that the ministry should not have begun to pay Accenture for benefits that were being delivered in the first year of the project (Provincial Auditor, 1998, pp. 33-35).

The Auditor's critiques of BTP had similarities and differences with IJP. In both cases, the Auditor claimed that benefits initially were overstated; while the government accepted the argument with respect to IJP, it defended its benefit measures for BTP, as will be discussed below.

The assistant deputy minister responsible for BTP was Bonnie Ewart, who had previously been commissioner of social services in the Halton region. In response to the Provincial Auditor's criticisms that benefits were not clearly demonstrated, she hired a third-party consultant, Raymond Hession, a former federal deputy minister of Supply and Services with substantial experience in the IT industry, especially common purpose procurement, to review the project. Hession subcontracted a statistical study of benefit attribution to the risk management consulting firm of Hickling, Lewis, and Brod (HLB). In February 1999, Hession and HLB reported, based on their statistical analysis of the program, that BTP would likely yield \$ 347 million in benefits, a return of 222 percent on the original investment (Public Accounts Committee, Dec. 9, 1999, p. 10). The benefits would arise from productivity gains in the administration of OWP and ODSP as well as more accuracy in making payments to recipients. The consultants noted that BTP had been delayed because "MCFCS was not adequately prepared to perform its expected role at the outset of the BTP." Finally, they predicted that Accenture's average hourly billing rate would fall because the mix of staff employed would shift (MCFCS, 1999).

After completing the review, Hession became more deeply involved in BTP, winning a competition to become the project director representing MCFCS.

The Provincial Auditor produced a special report on the BTP in 2000 reiterating the criticisms of the 1998 report. The Auditor did not accept the conclusions of the Hickling Lewis Brod statistical work on benefits because it could not provide absolute certainty, writing in his report:

Case terminations occur for various reasons, including changes in economic conditions, changes in policies, as well as changes in administrative procedures. As a result of these multiple effects, the number of cases terminated as a result of changes in administrative practices .... cannot be determined with absolute certainty. Instead, the incremental effect of the CVP initiative, for example, was estimated and included in the benefit pool based on a statistical model designed to obtain a 99 % confidence level that benefits were not overstated (Provincial Auditor, 2000, p. 8).

Hession joined BTP as Project Director in April 2000, responsible primarily for leading the day-to-day work of the project, and stayed until March 2002. Assistant Deputy Minister Ewart was responsible for managing the project's relationships with the rest of the ministry and externally. Hession implemented a number of practices that contributed to what he believes was a successful outcome. These included

- Retaining the robust business case that had previously been established by HLB
- Setting out a critical path plan for the entire project
- Holding daily progress meetings with the project's management team
- Engaging a project controller (CFO) with private sector background who exercised tight financial control
- Developing a procurement plan and cost estimates

- Holding managers for the different components of the project accountable for following the project's critical path, and
- Running "dress rehearsals" of project implementation both 4 months and 2 weeks in advance (Hession, 2003).

By January 2002, implementation of BTP had been completed across the Province. The benefit pool stood at \$ 587 million by March 2002, while the cost pool was approximately \$ 400 million. The benefits included reduced response time for clients using the automated telephone system, reduced time and effort expended by staff in determining eligibility, and reduced fraud. The government claimed BTP would continue to deliver \$ 200 million in benefits every year. The project also won awards for public-private partnerships and service excellence at the 2001 Showcase Ontario, the annual OPS conference in the IT area, and won the trailblazer award at an international e-government event in Washington in June 2002 (Daniels and Ewart, 2002).

### *Assessment*

In his various reports, the Provincial Auditor made several arguments questioning the benefits claimed by the ministry. His first contention was that the ministry "had not adequately considered using other contracting arrangements or maximizing the use of its own internal resources for at least some aspects of BTP" (Provincial Auditor, 1998, p.38). Certainly one would want to see the ministry consider a wide range of alternative arrangements. Assume that the Auditor is correct that the Ministry did not adequately examine a wide range of options and assume further that some of the unexamined options had higher net benefits than the CPP partnership with Accenture, the option that was

chosen. Nevertheless, this does not negate any benefits that were achieved through that partnership.

A second argument, directed primarily at the work done early in BTP, was that “ministry staff were well aware of the needed changes. In fact, a number of previous audit reports by the Provincial Auditor as well as a report by the Standing Committee on Public Accounts had made significant recommendations for improvements in these areas” (Provincial Auditor, 1998, p. 49). Deputy minister Suzanne Herbert’s rebuttal was that the ministry did not have the capacity to implement the Auditor’s recommendations.

My own view of the change reporting is that in fact Accenture’s technical expertise in change reporting was what got us to finally implement a program that, while we knew we had to do it, we had been unsuccessful at doing for several years (Public Accounts Committee, Dec. 17, 1998, p. 12).

The Auditor’s argument that a benefit should not be attributed to BTP because he had previously identified the problem and recommended dealing with it in a different way than the ministry ultimately chose is not persuasive. In identifying benefits, the question is not what could have been done, but what ultimately was done. The deputy minister’s claim is that her department was also aware of the problem, unable to solve it in the way suggested by the Auditor, and ultimately solved it with Accenture’s help. Solving the problem created a benefit attributable to BTP.

The Auditor’s third argument deals with the consultant HLB’s attempt to measure the benefits of BTP statistically. The Auditor claimed that, because case terminations occur for a variety of reasons, including changes in administrative practices, it is impossible to determine the effects of such changes “with absolute certainty.” HLB was using multivariate statistical analysis to determine the effects of each factor influencing

case terminations, holding all other factors constant. The results of such an exercise are necessarily probabilistic. The consultants chose a very high confidence level of 99 percent for their lower bound estimate of the benefits. Policy makers, for example finance ministries and central bankers setting economic policy or politicians reading public opinion polls, regularly make decisions based on probabilities, not absolute certainties. The Auditor would have done more of a service had he and his staff assessed the validity of HLB's statistical work *per se*, rather than disregarding it because it did not yield answers with absolute certainty.

As an observer, my conclusion is that the Auditor's arguments regarding BTP, at least as published in his reports, do not nullify the benefits claimed by the ministry. While the ministry and the Provincial Auditor have no legal obligation to reach agreement about benefits, I do not think their ongoing debate is even clarifying the issues. I would suggest that, if we want to determine whether BTP actually created benefits, the best way to proceed would be to hire a third-party reviewer with a strong background in social science research, give the reviewer access to all relevant research done by both both the ministry and the Auditor, and then ask the reviewer to criticize both. Finally, grant the reviewer a mandate to design any evaluative studies of her own. Such a study would be a reasonable last word on the question of benefits.<sup>12</sup>

On the cost side, the Auditor's arguments were, essentially, that Accenture was too expensive, both in terms of their rates and in terms of the amount of work they were doing. In evaluating these arguments, it is important to realize at the outset that CPP

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<sup>12</sup> Hession suggested to the Auditor the hiring of expert reviewers, but his advice was not accepted (Hession, 2003).

represents a major change in the way not only government, but also management consultants, such as Accenture, do business. Management consulting is a service industry that is paid when the service is performed and on the basis of work done, rather than results achieved. It is essentially different from building a new aircraft or developing new software, where research and development costs are incurred in advance of the first sale. Common purpose procurement delays payment and bases that payment on results achieved. CPP therefore imposed risks on Accenture that it was not accustomed to dealing with.

In this context, Accenture's actions can be seen as an attempt to minimize risk. Furthermore, Accenture would argue that, to a great extent, the risks are the result of partnering with the government. In particular, the government can delay the project if its staff are not able to perform scheduled tasks or if political decisions change the nature of the task, as happened in this project. The consultant can attempt to minimize its risk in a number of ways: charging high overhead rates for its employees' time, negotiating as large a cap on payments as possible, negotiating as much of its fees as possible outside the cap and making them immediately payable, and getting payment for services within the cap as soon as possible, for example, as soon as benefits have been achieved. Hession interprets these practices as an instance of margin banking, namely the private sector partner attempting to earn its margin early in the project, and then expecting the margin to erode as risks are encountered (Hession, 2003).

The clause of the CPP contract involving the payment of interest for costs can be interpreted as an effort on Accenture's part to give the government a

powerful incentive to pay as soon as partial benefits have been realized, rather than waiting until total benefits exceed total costs. The clause is one-sided because, in the ministry's case, no interest payments actually change hands, as the ministry both receives benefits and incurs costs. The Auditor, wanting to take a hard line on early payment for benefits achieved, also recommended basing any interest payments on Accenture's actual cash outflows, rather than its charges to the cost pool, which included overhead (Provincial Auditor, 1998, p.48).

Again we are left with a sharp difference in views regarding costs. In the ministry's view, as well as Hession's, costs were reasonable considering the benefits delivered, the expertise Accenture provided, and the risks involved. In the Auditor's view, costs were excessive, given his skepticism about both benefits delivered and the need for the ministry to seek outside expertise, rather than do the work itself.

To conclude: in our view, the BTP story is unlike IJP. The government made greater efforts to identify and measure benefits and, as discussed above, we find the government's case for the existence of benefits more compelling than the Auditor's skepticism. In terms of project management, the government had more success keeping the project on track and costs under control.

## **Teranet**

The history of Teranet, up to the recent sale of the government's interest, is adequately covered in Hrab (2003, pp. 50-2); therefore we will discuss the themes in that story that are relevant to this paper's focus on instrument choice among public

production, contracting-out, or partnerships, and the effective management of whichever instrument is chosen.

### *The Establishment of Teranet*

The Peterson Government decided in 1986 to begin the process of converting the land registration to electronic format (Public Accounts Committee, Feb. 26, 2001, pp. 389-90). The decision was not made out of necessity, because the paper and microfiche system was not broken, but rather to take advantage of the opportunity to use new technology to improve service and reduce cost. Ontario could have maintained its old system, waited for other jurisdictions to take the lead, and then adapt technology that had been developed elsewhere.

Initially, the project to convert the land registration system (POLARIS) was conducted within the then Ministry of Consumer and Commercial Relations. In 1988, the government decided to look for private sector partners in this project, and in 1991, the Teranet partnership was established. There were three reasons for shifting from internal production to a partnership:

- The private sector itself was interested in developing land-related information systems
- The government was finding the project of converting the records for approximately 4 million properties beyond its capability
- The growing fiscal crisis of the early Nineties was leading the Rae Government to seek private sector investors to participate in major projects (Public Accounts Committee, Feb. 26, 2001, p. 390, Daniels and Scriven, 1997).

The discussions of both IJP and BTP identified as a problem the desire of private sector partners to minimize their financial exposure. This does not appear to have been a problem with the Teranet partnership because of the breadth of private sector involvement. In addition to technology and consulting firms (e.g. EDS Canada and KPMG) there were financial investors (Altamira, several large pension funds, a chartered bank, and an insurance company) with the resources to cover development costs.

### *The Performance of Teranet*

The Provincial Auditor's report on Teranet emphasizes that in 1991 the project anticipated completing conversion of the records for all properties in the province by 1999 at a cost of \$ 275 million, but that cost estimates have now risen to \$ 680 million for completion of 87 percent of properties by 2010, with the possibility that total project costs could exceed \$ 1 billion (Provincial Auditor, 2002, pp. 333-7). In the Auditor's report and in subsequent media commentary, Teranet has the appearance of a classic compromised IT project – over budget, late, and with less than full functionality. But when Teranet was discussed by the Public Accounts Committee, the Government disputed the Auditor's analysis. Assistant Deputy Minister David Roote, who was responsible for land registration, said that the initial cost estimate of \$ 275 was not all-inclusive, and an inclusive estimate at that time was closer to \$ 400 million in 1991 dollars, or \$ 500 million in current dollars. He concluded that “these costs that we've incurred to date are in keeping with what was originally contemplated at the beginning of the project” (Public Accounts Committee, Feb. 26, 2001, p. 403). Deputy Minister of

Consumer and Business Services Sandra Lang called the worst-case estimate of \$ 1 billion “a highly speculative number and one we do not agree with” (Public Accounts Committee, Feb. 26, 2001, p. 402). David Roote attributed much of the reason for the delay in converting records to the downturn in the real estate market in the early Nineties, which reduced Teranet’s cash flow from electronic registrations and forced it to borrow money, increasing its interest costs (Public Accounts Committee, Feb. 26, 2001, p. 403).

The Provincial Auditor’s report did not mention Teranet’s accomplishments, which have been considerable. These have included:

- Satisfaction on the part of real estate lawyers, because title searches using Teranet have become simpler, requiring review of fewer documents, and more accessible, because they can be conducted at the lawyer’s office, rather than the land registry (Public Accounts Committee, Feb. 26, 2001, p. 408; Aaron, 2000).
- Winning a number of awards for IT innovation, public-private partnerships, and quality of work life (for example, being rated one of Canada’s top 100 employers in 2002 by Maclean’s Magazine)
- Exporting technology and expertise to the governments of the Czech Republic, Lebanon, Jamaica, Puerto Rico, and the Republic of Korea
- Developing a number of new software products, such as paying parking tickets online and online legal research and education (Richards, 2003).

### *Privatization*

The Province sold its 50 percent share in Teranet in August 2003 (Mackie, 2003). There are a number of factors to explain this decision. First, the government intended to

make substantial asset sales to cover its anticipated deficit this fiscal year. Second, Teranet has become essentially a software development company, and there is no compelling reason for government to hold shares in a company of this nature. Third, by retaining the power to set fees for using the land registration system and by owning the land registry offices and data, the government can effectively protect the public interest in this area. Fourth, Teranet's current business plan envisages computerization of only 87 percent of ownership records, which excludes properties in rural Ontario for which original records had been imprecise and which are infrequently transferred. Given that governments are often expected to provide equal access for all, a private sector owner, unlike government, would be able to resist any pressure to reverse this business decision not to computerize the unprofitable records.

It is hard to determine from available data how much profit the government made on this privatization. The Provincial Auditor reported that the project had direct implementation costs of \$ 391 million between 1991 and March 31, 2002 (Provincial Auditor, 2002, p. 335). With a 50 percent share in Teranet, the province could have been expected to pay half of the implementation costs, or approximately \$ 200 million. The province initially invested \$ 29 million to establish Teranet. Thus, by selling its interest in Teranet for \$ 370 million, the province would appear to have made a profit of something over \$ 100 million. In addition, there are clauses in the sales agreement to the effect that

- the government will share equally with the private sector partnership that now owns Teranet additional profits if a future sale results in a higher price for the company, and

- for three years after closing, the Government holds an unrestricted veto over the sale of any controlling interest in Teranet and as long as Teranet is an exclusive supplier to the Government of Ontario, the government has the right to approve any acquisition of 25 percent or more of the shares of Teranet or the private sector partnership that owns it (Mackie, 2003, and [www.superbuild.gov.on.ca](http://www.superbuild.gov.on.ca)).

It is now an appropriate time to review the government's role in Teranet in terms of Teranet's operational and financial performance. As in the case of the business transformation project, the Auditor paints a bleak picture of cost overruns and long-term risks to the government. The government disputes the allegation of cost overruns, claims that Teranet has performed well in terms of user satisfaction and the development of new technology, argues that the Auditor overstated future risks and, finally, that privatization has removed those risks. It would be useful to have an impartial third party determine where the truth lies.

### **Drawing Conclusions**

This section will draw conclusions from the case studies regarding the successful management of large public sector IT projects. It will also discuss the conclusions reached in the OECD (2001) and the UK Parliamentary Office of Science and Technology (2003) reports. These reports can be considered to fall within the project management literature, but with the complication that the projects are not internal to government, but invariably have a private sector component, either as contractor or partner.

### *Highway 407*

The Highway 407 case suggests five conclusions:

- An effective project management office (OTCC) was established, having the appropriate skills, recruited from the private sector where necessary, and external expertise as part of its governance structure.
- The attention of senior management (the deputy minister and minister) was effectively used to put pressure on contractors to meet their obligations.
- A risk analysis approach that continually identified risks, their probability, seriousness, and mitigation strategies, helped OTCC manage risk.
- The project demonstrated the disjunction between the Standish Group criterion for success, according to which it was compromised, and the net present value criterion, according to which it was a signal success. The net present value criterion was the correct one.
- Given the rapid escalation in the project's value, it would have been preferable for the government to retain a partial interest in the highway rather than selling its entire interest.

### *Integrated Justice Project*

The integrated justice project failed for a number of reasons:

- It had a large number of client groups and organizations, all with different needs and priorities, hence increasing project complexity and creating difficulty in coordination
- Some affected groups, in particular court staff, resisted technological change, especially if it was seen as threatening their jobs

- The specifications for software for case management in the court system were too detailed and complicated for software developers and consultants to implement.

### *Business Transformation Project*

Key success factors for the business transformation project identified by Ray Hession include:

- Establishing a strong business case, underpinned by quantitative analysis
- Use of the critical path method for planning the entire project and for holding managers accountable for their components of the project
- Engaging a project controller (CFO) with a private sector background to exercise tight financial control over the project
- Developing a procurement plan and cost estimates
- Holding daily progress meetings with the project's management team
- Running "dress rehearsals" of project implementation.

### *Teranet*

Key success factors include:

- Having sufficient financial capacity on the part of the private sector consortium to be able to move ahead with the project even when revenues were lower than forecast due to the weak real estate market of the early Nineties
- Having committed project champions in both the private and public sectors. The public sector context was especially challenging because the project spanned governments of three political parties (Daniels and Scrivens, 1997)

- Defining the project's vision clearly and carefully (Daniels and Scrivens, 1997)
- Reaching closure on tough questions concerning the nature of the partnership (Daniels and Scrivens, 1997).

### *OECD Report*

The OECD report (2001) makes a number of recommendations regarding the management of large IT projects. While we do not have enough information about the four case studies to comment on each recommendation with respect to each of them, we can comment on at least some.

- Identify the governance risks inherent in a public sector setting (for example, rapid changes in policy and legislation) and account for them in planning projects. BTP most clearly exemplified these risks; accounting for them required modifying the project from its initial plan, for example, by heavier reliance on the consultants. This adaptation contributed to the project's success.
- Divide large projects into self-contained modules that can be adjusted to changing circumstances, technology and requirements. IJP was the project that was the most modularized, but it was still unsuccessful. Ultimately, the problem with modularization appears to be that it is not possible to make the modules truly self-contained (Parliamentary Office of Science and Technology, 2003).
- Avoid emerging technologies and favour standard rather than custom software. Both Highway 407 and Teranet developed new technology and software. BTP and IJP developed custom software. It would appear that with effective project management it is possible for a project to develop new technology and software.

- Identify and manage risks. Both Highway 407 and BTP demonstrate well thought out risk management strategies.
- Have clear lines of responsibility and accountability for project management. Both Highway 407 and BTP demonstrated clear lines of accountability, from the project manager to departmental senior management and, ultimately, to the minister.
- Recruit well-qualified talent, either on an ongoing basis, or specifically to the project. Highway 407, BTP, and Teranet all demonstrate the recruitment of talented people (Dennis Galange as CEO of OTCC, Ray Hession as project manager for BTP, and Aris Kaplanis recruited from Unisys to be CEO at Teranet), often from the private sector, to the projects. These recruitments were project-specific, rather than to the public service as a whole, but they did provide the necessary skills for project success.
- Provide both incentives and penalties for contractor performance. The Highway 407 contracts provided both incentives and penalties and the technology contractors did pay penalties for late performance, which added to the other pressures for delivering the project. Common purpose procurement will be discussed in more detail below, but suffice it to say at this point that the CPP framework may create an incentive for the private sector partner to inflate recorded costs to maximize their share of the project's benefit pool.
- Involve end users in designing the project. Highway 407 involved end users in the sense of using traffic surveys and forecasts. Teranet also seems to have involved

the legal community. It would appear that part of IJP's failure can be attributed to not involving end users early enough.

*UK Parliamentary Office of Science and Technology Report (2003)*

The UK report makes recommendations that are similar to those of the OECD report, but they deal with both the management of individual projects and the role of central agencies of government in strengthening the management of a portfolio of projects. We have not repeated Ontario examples that were presented in relation to the OECD report. The recommendations are as follows:

- A project must have a strong business case. Ontario examples of effective business cases include Highway 407 and BTP, after the business case was strengthened by the Hickling Lewis Brod statistical analysis of family assistance cases.
- A project must have effective leadership and senior management commitment.
- Involve end users in developing the project.
- Stay in constant communication with suppliers, especially if difficulties are emerging. This was exemplified by OTCC's close contact with its technology contractors.
- Undertake gateway reviews of projects at a number of stages. The work should be done by an independent review team, and, if there are difficulties, a decision could be taken to scrap the project or to take remedial action.
- Designate a senior champion, a senior public servant to whom the project manager reports and who is responsible for the project's ultimate success. In the

case of Highway 407, the deputy minister of transportation played this role. For BTP, it was Assistant Deputy Minister Bonnie Ewart.

- Build a pool of public servants with skills in project planning and management and risk analysis, a body of knowledge within the public service in these areas, and designate centres of excellence.

### *Conclusions about the Management of IT Projects*

The cases discussed, as well as the OECD and Parliamentary Office of Science and Technology reports, all point to a formula for the successful management of IT projects. Its components include

- Having a clear business case for the project, based on quantitative analysis
- Incorporating risk analysis into the business case and undertaking risk management while the project is ongoing
- Including in contracts with private sector partners appropriate incentives and penalties
- Developing a project management team with the necessary skills, often recruited from the private sector
- Having project champions in senior management, including the deputy minister and minister
- Maintaining close communication between the project team and the project's ultimate users at all phases from design to implementation
- Maintaining close communication between the project team and private sector partners or contractors.

### *Contracting or Partnership?*

The conclusions presented above pertain to any large IT project in the public sector. But is it preferable to structure the relationship with private sector providers as that of contracting-out or a partnership? The cases incorporate both contracting and partnerships, and hence speak to that choice, which is the final topic of this report.

Highway 407 demonstrates effective contracting. Both the road and the tolling technology were built under large contracts, where the government defined what it wanted, paid the contractors to produce it, monitored their progress, provided incentives for early completion and imposed penalties for missing deadlines. The government took the financial risk and subsequently reaped the financial rewards. Because the contracts were fixed price, the contractors could benefit if they did the work at an acceptable quality below the price bid, and similarly would lose money if it cost more than they had bid. A second risk to the contractor was timing, with incentives for early completion and penalties for lateness.

The integrated justice and business transformation projects, together, demonstrate the strengths and weaknesses of common purpose procurement. This methodology provides a strong incentive to measure benefits, which is valuable in planning a business case. Unfortunately, it does not recognize benefits that cannot be captured monetarily, such as resource savings that are reallocated internally. Because it expects the contractor to finance its development costs internally, it greatly increases the contractor's financial risk, and the contractors in these cases, management consultants, do not carry a great deal of working capital. The contractors respond to this risk by charging the highest possible

rates (including overhead) for their employees' time, so as to capture as much of the benefit pool as possible and attempting to receive payment as soon as benefits begin to flow. The existence of the benefit pool and the presence of risk both create a perverse incentive to the contractor to inflate costs to claim as much of the pool as possible.

While common purpose procurement has these difficulties, alternative models of procurement also have difficulties when faced with the worst-case scenario of high complexity, low contestability, and high asset specificity. When the government cannot define precisely in advance what it is looking for, the door is open to opportunistic behaviour on the part of private sector partners. Any such contract has the potential for scope creep, whereby the private sector partner makes a low bid to win the business and subsequently attempts to change the specifications so as to provide more work for itself. Cost-plus contracts also give contractors an incentive to maximize costs. Any procurement model under these circumstances requires government to be hard-nosed in its negotiations with private sector partners and vigilant in monitoring their performance.

Common purpose procurement, as practiced in Ontario, attempts to shift risk from government to the private sector partner, by making the partner responsible for its share of development costs. The private sector partners nonetheless attempt to shift risk back to the government, in the ways demonstrated by the IJP and BTP cases. This attempted mutual shifting of risk, necessarily creates difficult negotiations both at the outset and throughout the life of the project.

As a consequence, we would argue for that, in its future IT projects, the Government of Ontario move to a contracting model closer to that of Highway 407 than the common purpose procurement model used for IJP and BTP. In its RFP, the

government could specify the outputs, but not the means of achieving them, so that contractors could present different approaches, just as they did for Highway 407. If the government has the capacity to pay the contractor upfront, the problem of inflating expenses to claim as much of the benefit pool as possible can be avoided. Incentives could be built into the project in a number of ways, for example:

- The inherent incentive in a fixed price contract to minimize cost, subject to a quality constraint imposed by the government,
- Using incentives for timely completion and penalties for lateness, as well as similar incentives for other desired characteristics,
- Measuring the size of the benefit pool realized and giving the contractor a predetermined share of the pool.

Our conclusion, therefore, is that a contracting regime could be run with several incentives to good performance, and would eliminate the perverse incentives that seem to characterize common purpose procurement partnership. It is our understanding that common purpose procurement is being reviewed by Management Board Secretariat; this paper would suggest that such a review is timely, and that a move to a contracting out system with the creative use of incentives would be the appropriate policy direction.

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