

Strategic Transformation and Mainframe Services Project

Project Summary

March 2009

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Executive Summary

The purpose of this report is to provide to the public and interested stakeholders a summary of the Strategic Transformation and Mainframe Services (STMS) alternative service delivery (ASD) initiative.

Workplace Technology Services (WTS) of the Ministry of Labour and Citizens' Services (the Ministry) provides the computing infrastructure necessary to run the majority of business applications for core government. This infrastructure is comprised of many components. The scope of this initiative covers the mainframe server, midrange (Windows, UNIX and OpenVMS) servers, the storage devices supporting the servers, the processes necessary to deliver these services (notably security and service management) and the data centres.

The server and storage infrastructure is aging and requires continual and significant capital investment to remain current and reliable. Data centre facilities are near capacity, require significant upgrades to maintain reliability, and are situated on historical flood plains and earthquake fault lines.

WTS is faced with continual and increasing challenges in attracting and retaining skilled technical staff to manage and maintain the infrastructure. This is due partially to shifting demographics and partially to the increasingly competitive employment market.

Recognizing the elevated risks associated with managing this environment, the Ministry initiated the STMS project to proactively mitigate these risks while transforming and improving existing service delivery.

As a result of the Joint Solution Procurement Process for STMS, the Ministry entered into a contract with EDS Advanced Solutions Inc. (EAS) that includes two broad categories of services. Managed hosting services, provides clients an environment that is sized and configured to run their business applications. Pricing for managed hosting services is based on a "utility model" that allows clients to purchase services from a catalogue and pay only for what they consume.

The second category, data centre services, provides secure and reliable locations for clients to situate their equipment. The data centre services will be delivered from two locations; a multi-tenant facility in the process of being built in Calgary, and a new facility to be built in Kamloops, British Columbia. The facilities will have high standards of reliability and

availability.

The STMS economic model provides for unit price reductions over the contract term driven by increasing efficiencies and streamlining how the services are delivered by EAS. In addition, to further maximize cost reductions, the contract provides economies of scale savings from the involvement of Broader Public Sector (BPS) representation – notably from the Insurance Corporation of British Columbia (ICBC) and the Health Authorities. As part of the STMS initiative, ICBC has also entered into an agreement with EAS for data centre services. It is anticipated that over time other BPS entities will purchase services pursuant to the STMS initiative.

Background

Over the last 20 years, government operations have been significantly automated through use of technology. The Province of British Columbia (the Province) has developed or purchased hundreds of business applications which are hosted on over 2100 midrange (Windows, UNIX and OpenVMS) and mainframe servers. The servers are used for processing, hosting and storage of applications, data and information that Ministry clients can use to build and run their business applications in a secure and managed environment. The shared servers provide online access to about 1.2 petabytes (1200 TB) of government data. The scope of operations includes Ministry and non-ministry application requirements as well as cross-government application needs such as Corporate Accounting Services, shared file and print services, e-mail and authentication services.

WTS faces issues in managing, maintaining and responding to ever increasing service demands. The key challenges can be summarized as follows:

- Ongoing problems with attracting and retaining skilled technical resources;
- Aging workforce eligible for retirement soon;
- Insufficient resource capacity/expertise to transform the service delivery model e.g., design and implement a full disaster recovery service for non-mainframe;
- Significant capital required to ensure server architecture is kept current;
- Lack of flexibility in supporting temporary or peak increases in system workload, storage and backup functions;
- Difficulty in supporting extended-hours support and coverage;
- Ongoing issues with keeping software and hardware at supported versions; and
- Time lags due to procurement processes (four weeks or more per server).

To address these challenges, the immediate operational needs of WTS and to transform the service delivery model, a Joint Solution Procurement (JSP) Process was initiated to engage the private sector to assist with providing solutions.

Procurement Process

To address the challenges outlined in the Background Section of this Project Summary, on March 15, 2007, approval was granted to proceed with a Joint Solution Procurement (JSP) Process. The Joint Solution Request for Proposal (JSRFP) was released on June 19, 2007. The broader public sector was involved in creation of the JSRFP and their needs were described as potential scope to the Province's requirements.

The Province received 4 responses from: 1) IBM Canada Ltd., 2) EDS Canada Inc., 3) Iron Diamond Networks and 4) PEER 1 Network Enterprises, Inc. After evaluating the proposals, the Ministry invited IBM and EDS to move into the Joint Solution Definition (JSD) phase of the JSP process.

During the JSD phase, the business imperatives for the Ministry and its stakeholders were discussed with both proponents. Through these discussions, the scope of the deal was further defined and solidified to include services that had been previously considered optional. In early January 2008, the JSD phase concluded with final presentations from IBM and EDS which included the mainframe and data centre services and hosting services for midrange (Windows, UNIX and OpenVMS), storage and backup and service management.

In January 2008, the Ministry initially entered due diligence activities and negotiations with IBM Canada. EDS was designated the "Vendor-in-Waiting". Negotiations with IBM continued until July 2008 at which point the Province, exercised its discretion under the JSP Process and the Joint Solutions Definition Agreement signed by IBM and the Province, and terminated negotiations. In accordance with the JSP Process, the Province elected to continue the process with EDS, the Vendor-in-Waiting, and EDS was asked to begin due diligence activities and negotiations with the Province on July 4th, 2008.

The Final Agreement

The Province signed a Master Services Agreement (MSA) with EDS Advanced Solutions Inc. (EAS) on March 30, 2009. The contract has a term of 12 years for managed hosting services and 15 years for data centre services respectively, with possible extensions for both service categories up to a maximum of 20 years.

As part of this agreement, EAS has assumed responsibility for the following services including all business processes in support of these services:

- Storage and Backup Services
- Hosting Services
 - Open Systems Group (OSG)
 - Application Enabling Systems (AES)
 - Windows

Responsibility for mainframe services will be assumed by EAS on January 31, 2011.

The MSA also provides an opportunity for broader public sector entities to be buyers (Buyers) by purchasing services directly from EAS on the basis of substantially similar pricing and terms.

Benefits

A key driver for this initiative is to transform the delivery of managed hosting services to Ministry clients in a way that efficiently aligns computing infrastructure provisioning with business drivers. Managed hosting services are scalable and provide the flexibility to support fluctuating client demand in system workload, storage and backup functions. As demands rise and fall, pricing follows, which ensures clients pay only for the services they consume.

This initiative transfers the risks associated with keeping platforms and facilities current to EAS (for more information on risks, see Appendix B). The contract provides for periodic equipment refreshes and the costs are embedded in the unit rate for services. This structure minimizes the need for recurring injections of Provincial capital.

As the Province's computing environment has evolved over time, a number of different support models and service levels have been developed. This contract standardizes support and EAS is contractually obligated to deliver the services at specific service levels that meet or exceed industry norms. There are substantial financial consequences if these service levels are not met.

To meet workforce challenges identified in the Background section above, EAS has assumed responsibility for providing services through a skilled workforce. Accordingly, 120 positions

within WTS were affected and all staff were given offer letters of employment with EAS. Approximately 58 employees transferred from government to EAS in support of this initiative. For those employees who chose not to accept the offer of employment with EAS, other options were made available to them; including VDP (Voluntary Departure Program), ERIP (Early Retirement Incentive Program), and remaining in government under the Article 36 Placement process. It is anticipated that EAS will hire additional resources as required.

Mainframe

EAS will deliver managed mainframe services after the opening of the new data centre in Calgary. The solution will support the Province's existing software suite, applications and services. EAS will layer on their own standard toolset to improve storage management, monitoring, reporting, change management and performance management to drive economies and accelerate service transformation. The solution will also provide consistent levels of network, end user, forms and print support.

Responsibility for mainframe services will be assumed by EAS on January 31, 2011.

Midrange

EAS is responsible for the Windows, UNIX and OpenVMS platforms for WTS. This includes typical functions such as operating system and hardware installation and configuration, maintenance, patching and upgrades, fault monitoring and resolution, change management and managing the procurement cycles necessary to meet demand.

Specific services also transitioned to EAS include; the WTS "Application Enabling Services" which provide support services (e.g. database management, application and middleware support) to various ministry clients, Citrix-based computing services, shared file and print services and web hosting (both shared and dedicated).

Transformation of the Midrange environment includes virtualization to reduce the number of physical servers by consolidating instances on larger machines. This technique is anticipated to provide greatly enhanced scalability, drive economies of scale and significantly reduce the demand for data centre space resulting in less power consumption.

Storage and Backup

The Province is facing rapid growth in storage requirements. The number of applications is increasing as is the amount of data each supports. Current initiatives, notably eHealth, will accelerate demand for storage services within the near future.

To address the increasing demand, EAS will deliver comprehensive storage and backup services to support the mainframe and midrange services. The services will be available in different tiers of service that define both the performance and the price for the service. It is

anticipated that attractive pricing will incent clients to store their data on the most cost efficient media.

EAS will also address long-term issues with tape retention by migrating existing, unsupported tapes to current formats and ensuring that all tapes remain current and readable over the contract term.

Security

For in-scope services, EAS will provide security administration and compliance services. Access to systems will be strictly controlled and all servers will have the requisite virus protection and vulnerability scans. Services and infrastructure will be properly firewalled (supporting the Province's Security Enhancement Project) and an Intrusion Prevention System will be implemented to provide further safeguards.

The contract includes strict privacy, security and confidentiality provisions that meet or exceed the standards of British Columbia's Freedom of Information and Protection of Privacy Act. In addition to contractual and legal safeguards, all data will be protected by new security technology and no data will be stored outside Canada. (For more information on Privacy, see Appendix A). The contract provides for reasonable audit frequency and compliance. EAS will comply with all requisite Province policies regarding the retention and protection of personal information and the destruction of data. Strict personnel policies and regular training will ensure that EAS staff are trained and familiar with these policies.

More information on data centre security including physical security can be found below in the Data Centre section below.

Service Management

EAS will provide comprehensive service management policies, procedures and tools across all service lines which are based on the Information Technology Infrastructure Library (ITIL) standard. Interfaces to existing Province ticketing systems will be built to ensure the Province retains source data for Change, Incident, and Problem management. Services will include:

- Asset Management;
- Change Management;
- Incident and Problem Management ;
- Request Management; and
- After Hours Service Desk (Optional Service).

Data Centre

The EAS data centres will be located in Kamloops, British Columbia with a secondary backup site in Calgary, Alberta. These data centre facilities will be available as follows:

- Kamloops – April 2011
- Calgary – November 2009

The new data centres will host government applications and information in highly reliable and available facilities. The two data centres will provide all Buyers with enhanced disaster recovery capabilities, and be situated outside the high risk earthquake zones and off of the 200 year flood plain.

To ensure maximum reliability and availability, the data centres will be built to specifications consistent with a Tier III data centre. This will ensure sufficient redundancy and capacity to allow preventative maintenance, repair and troubleshooting of all critical data centre infrastructure (heating/cooling, power) without an outage. The data centres will provide sophisticated security procedures, including biometrics, and advanced fire prevention and suppression systems to provide additional safeguards. Physical security is provided through biometric secured access points, separate secure customer environments and security staff. Current WTS infrastructure will be migrated to the new data centres as they become available and servers are refreshed.

Working with the Province, broader public sector entities have the option of purchasing managed hosting services or purchasing co-location services. Co-location services provide a customer with a separate secure environment with an allotment of power, space and data centre services within a data centre with the equipment still being managed by the broader public sector entity.

Other Solution Features

Both the managed services and data centre services provide environmental benefits. EAS has formal procurement and supply chain processes in place to ensure that assets used in the delivery of services are energy efficient, ensuring the best use of resources.

In addition, a key aspect of the transformation of managed servers is the virtualization of storage and midrange servers. This process will result in a reduction in the number of physical servers by providing virtual servers on larger infrastructure components.

As a general principle, larger facilities are more efficient to operate. The STMS data centres will achieve efficiencies through consolidating data centre requirements from several small, separate facilities into two larger data centres. These centres are most efficient when operated at or near their capacity. This contract ensures that capacity can be redistributed amongst the Buyers in order to better match variations in requirements from time to time.

Overall, this approach ensures that data centre capacity will be used efficiently. Virtualization and efficiencies are projected to reduce overall power consumption by approximately 50%.

The protection of personal information is of critical importance to government. EAS has in place, and will maintain, policies and procedures specific to both privacy and security as it relates to their obligations with this contract.

The privacy and security solution includes strong contractual provisions, technical requirements, custody and access restrictions and controls over subcontractors and employees (further information can be found in Appendix A).

These benefits ultimately ensure that the services the government provides to the people of British Columbia continue to be administered in the most effective and efficient means possible.

Ongoing Contract Management

The MSA provides an opportunity for both the Province and broader public sector to be Buyers and purchase services directly from EAS on the basis of substantially similar pricing and terms. The MSA is structured to ensure consistency of approach, services and contract terms while providing each Buyer the ability to contract for and manage their own specific operational agreement.

The Ministry will provide contract management oversight, high-level relationship management, and be the escalation point for matters that cannot be resolved. To this end, the Buyers and EAS agree that the governance and management structure and related processes will align with and enable “best practices” for sustaining complex, multi-party agreements.

To manage this complex environment, a multi-level governance approach has been adopted.

Strategic Infrastructure Division

The Ministry, through the Strategic Infrastructure (SI) division, will be the contract administrator for STMS which will be operated as “Hosting Solutions BC”. SI is also responsible for other shared IT infrastructure initiatives sponsored by the Province.

SI will have the following responsibilities with respect to STMS:

- On boarding new Buyers to gain aggregate economy of scale savings;
- Report on aggregate deal performance and benefits;

- Lead marketing and sales committee (in cooperation with EAS) to ensure coordinated service growth and amendments;
- Lead governance committees as required to support the deal;
- Work closely with WTS and its respective Alliance Management Office (AMO) to ensure their clients are supported;
- Relationship management with EAS and Buyers;
- Provide oversight for the transition of services, including:
 - Identify, resolve, and escalate systemic issues that affect multiple Buyers;
 - Coordinate contract change management between vendor and Buyers;
 - Develop annual strategies to link the deal with the business plans for each Buyer as required;
 - Lead benchmarking and audits;
 - Lead service level agreement reviews;
 - Lead and prepare reports, studies, analysis and aggregate deal communications; and
 - Facilitate the development of an annual deal related technology plan.

Buyers will share the cost of contract administration related to STMS. Contract administration activities are designed to maximize the potential benefits possible via new buyers in the most economical and efficient manner. The extent of participation (i.e. planned or actual spend) of each Buyer will determine their equitable share of the administrative costs.

Demand Aggregation

Through SI, all Buyers of data centre services from EAS under STMS will jointly plan and manage their consumption against the aggregate commitment. Each individual organization will be able to decrease their Volt Amp (VA) capacity reservation as long as the decrease does not result in the aggregate consumption falling below the Province's committed consumption level. Similarly, growth must also be planned and managed in the aggregate as a certain level of quantity increase will necessitate physical building expansion. As consumption services grows over the term, SI will be responsible for ensuring that the appropriate volume price discount will be applied to all Buyers.

Appendix A – Privacy and Protection of Personal Information

STMS provides stringent and comprehensive contract provisions to safeguard the privacy and protect personal information. A summary of the relevant safeguards is below.

(X = not a specific requirement; ✓ = specific requirement; I = implicitly required to comply with other contract provisions)	
Contractual Provisions	
EAS will comply with the <i>Freedom of Information and Protection of Privacy Act</i> .	✓
Personal information will remain in Canada (prime data locations in Kamloops and Calgary).	✓
EAS will notify the Province promptly in any situation where there has been an unauthorized disclosure of personal information.	✓
EAS will notify the Province promptly in any situation where it receives an order to disclose personal information, whether that request is made by an organization inside or outside of Canada.	✓
Substantial financial remedies and the right to terminate the contract for unauthorized disclosure of personal information including under the <i>USA Patriot Act</i> .	✓
Technical Provisions	
EAS will comply with provincial policies and procedures regarding privacy and security as applicable to the services.	✓
EAS will have policies and procedures that outline privacy and security measures and disclosure requirements (a detailed privacy management plan will be created by EAS and is referenced in the contract).	✓
Strong technology security measures will be implemented, including firewalls, encryption and physical security.	✓
Risk assessments will be required by EAS: (a) at the data centre facilities and EAS service locations, (b) prior to any material change in the services, procedure, applications or technology, and;	✓

(X = not a specific requirement; ✓ = specific requirement; I = implicitly required to comply with other contract provisions)	
(c) in the event of a security incident.	
<i>Custody of and Access to Personal Information</i>	
Access to personal information will only be provided to those employees requiring access to perform services and subject to authorization process.	✓
Storage of and access to personal information, including remote access, will be only within Canada, unless approved by the Province.	✓
Personal information within the custody of EAS will be segregated from the information of other EAS customers.	✓
Strict records management and retention policies will be implemented.	✓
The Province will have the right to audit data movement as part of its general audit provisions.	✓
Privacy and security obligations will flow to EAS' subcontractors as applicable to the services.	✓
As between the Province and EAS, the Province remains the owner of the personal information.	✓
Privacy impact assessment has been completed by the Province.	✓
<i>Subcontractor and Employee Provisions</i>	
Any subcontractor having access to or custody of personal information will be subject to contractual provisions for privacy protection of the Province's data.	✓
Explicit education and training for EAS and subcontractor staff on privacy and security will be provided by EAS, with refresher training on a regular basis.	✓
EAS employees and subcontractor employees, who have access to personal information, will sign a confidentiality covenant with their employer that includes: (a) a statement that the employee will access and deal with personal information only in strict accordance with the written policies and processes agreed to between EAS and the Province,	✓

<p>(X = not a specific requirement; ✓ = specific requirement; I = implicitly required to comply with other contract provisions)</p>	
<p>(b) a statement that the employee is aware that the <i>Freedom of Information and Protection of Privacy Act</i> provides for “whistle blower” protection for those who report incidents relating to foreign demands for disclosure, and</p> <p>(c) a statement that the employee is aware that under the <i>Freedom of Information and Protection of Privacy Act</i> there are certain specific obligations placed upon the employee, in particular an obligation to provide notice to the Province of any foreign demand for disclosure of personal information.</p>	
<p>Prohibition on EAS from adding or changing key subcontractors without the Province’s approval.</p>	<p>✓</p>
<p>Privacy and security obligations flow to EAS’ subcontractors, as applicable to the services.</p>	<p>✓</p>

Appendix B -Risk Allocation and Mitigation

Material risks transferred to EDS Advanced Solutions (EAS)

Risk Category and Description	Allocation of Risk EAS	Allocation of Risk Province	Mitigation
Business Risk			
Performance to established service levels	✓ ✓ ✓		<ul style="list-style-type: none"> Financial consequences established for missed key service levels. Ongoing failure to meet key service levels is grounds for termination for cause. Performance guarantee is in place.
Attracting and retaining professional resources	✓ ✓		<ul style="list-style-type: none"> Option for impacted employees to transfer to EAS with collective agreement provisions, seniority, benefits and pension plan. Commitment to continuity of key management personnel.
Business Transformation of predefined projects	✓		<ul style="list-style-type: none"> Business transformation to be undertaken within agreed timeframes and deliverables.
Disaster recovery and business continuity	✓		<ul style="list-style-type: none"> Business Continuity and Disaster Recovery plans must meet or exceed current Ministry standards.
Economic Risk			
Variable and fluctuating costs over the term.	✓ ✓ ✓		<ul style="list-style-type: none"> EAS has provided committed managed hosting services pricing with productivity savings. EAS is responsible for data centre construction costs. Prices will only be adjusted annually for inflation.
Vendor and subcontractor insolvency	✓		<ul style="list-style-type: none"> Corporate guarantee is in place from EAS' parent company, HP.

Materials risks shared by the Province and EAS

Risk Category and Description	Allocation of Risk EAS	Allocation of Risk Province	Mitigation
Business Risk			
Transition plan failure	✓ ✓ ✓	✓ ✓ ✓	<ul style="list-style-type: none"> • A detailed transition plan has been developed. • EAS has an incentive to transform the business in order to recover its investment and to leverage the growth potential. • Financial implications to EAS for not meeting transition timelines.
Client satisfaction	✓ ✓ ✓	✓ ✓ ✓	<ul style="list-style-type: none"> • EAS will conduct regular client satisfaction reviews at the request of the Province to assess satisfaction with service provided. • EAS is responsible for responding to client dissatisfaction issues. • Governance model ensures visibility and resolutions to widespread client affecting issues.
Data integrity and security	✓ ✓ ✓ ✓	✓	<ul style="list-style-type: none"> • EAS will comply with or exceed the Province's data security policy. • Strict and comprehensible security processes, technologies and contractual provisions. • Liability for privacy breach or unauthorized use or disclosure of personal information. • Breaches of privacy obligations can be grounds to terminate the contract for cause.
Legislative or policy change that significantly impacts on the scope, systems or business processes	✓	✓	<ul style="list-style-type: none"> • Annual business planning, joint priority setting process, and change order process to accommodate and plan for change.
Contractual working relationship	✓ ✓	✓ ✓	<ul style="list-style-type: none"> • Strong governance model. • Ministry has implemented Strategic Infrastructure and Alliance Management Office to facilitate effective relationship.

Materials risks retained by the Province

Risk Category and Description	Allocation of Risk EDS	Allocation of Risk Province	Mitigation
Business Risk			
Management of customer and stakeholder group relations		✓ ✓	<ul style="list-style-type: none"> • Ministry is responsible for customers and stakeholders. • Ongoing communication will continue to occur with stakeholders.
Business relationships with other ministries and other public-sector organizations		✓ ✓ ✓	<ul style="list-style-type: none"> • Ministry is responsible for business relationships within the provincial government and the broader public sector. • Ministry has conducted extensive consultation with other ministries. • Work will continue throughout the term of the contract to onboard additional broader public sector organizations for aggregated benefits.
Contract/alliance management	✓ ✓ ✓	✓ ✓	<ul style="list-style-type: none"> • Ministry has retained a strong team to monitor contract compliance. • EAS is responsible for providing accurate and timely reporting for all service levels. • The Ministry retains the right to investigate, to audit and have any deficiencies addressed. • Performance will be regularly reviewed through the governance processes. • Strategic Infrastructure and AMO will lead the contract management for its respective Buyers.