WTS Governance & Performance Framework Review

Final Report

May 2008
Project #112095

Our Services were performed and this Report was developed in accordance with our General Services Agreement dated September 11, 2007, and are subject to the terms and conditions included therein.

Our work was limited to the specific procedures and analysis described herein and was based only on the information made available through November, 2007. Accordingly, changes in circumstances after this date could affect the findings outlined in this Report.

We are providing no opinion, attestation or other form of assurance with respect to our work and we did not verify or audit any information provided to us.

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Executive Summary

Background

Shared Services BC - Workplace Technology Services (WTS) offers information technology infrastructure support services to the provincial government and the broader public sector in British Columbia. These services include network, hosting, application and workstation services. Within its program, WTS manages three Alternative Service Delivery (ASD) services – mainframe, payroll and workstation services. Over the last two years WTS has undergone a number of changes in the way it is managed and operated, as well as changes in its management. These factors as well as a Treasury Board request have resulted in the need for an independent assessment of various aspects of the WTS governance and performance framework.

The Ministry of Labour and Citizens' Services with the help of Internal Audit and Advisory Services Branch, Office of the Comptroller General, Ministry of Finance, engaged PricewaterhouseCoopers (PwC) to conduct an independent assessment of the WTS governance and performance framework.

Objectives and Scope

The review scope/objectives included an assessment of the following:

A. **Review of the Business/Costing Model** to:

- Assess the reasonableness of the model's logic and assumptions;
- Assess the process used to validate the model's costs and assumptions; and,
- Evaluate the long term sustainability of the model.

B. **Comparative Benchmarking** of Application Hosting – Windows, and Backup Services, to:

- Determine whether there are comparable measures (private and public sector);
- Determine the reasonableness of the overall costs for service delivery; and,
- Validate the infrastructure costs as a percentage of the total service delivery costs (taking into account the complexity, size and volumes).

C. **Review of the process for identifying and determining infrastructure requirements for new applications** to determine potential ways to improve the existing processes.

PricewaterhouseCoopers Approach

PwC conducted its assessment between September and December 2007. The approach for the assessment consisted of:

- PwC's proprietary methodologies/frameworks including:
  - Charge Rate Calculation Process model – for evaluating the WTS business/costing model;
  - Comparative Analysis Methodology– uses a services driven approach to obtain comparative cost data; for benchmarking of the identified service areas;
- Relevant extracts from the leading industry frameworks such as ITIL, CoBIT, ValIT as part of the evaluation; and
- External research material.

Key Findings by Area

Review of the Business/Costing Model

WTS applied a structured approach to building its business/costing model and obtained consensus from all the client Ministries. The model was developed by a dedicated team of professionals with prior experience with developing costing/pricing models for shared services within the BC Government. These factors have enabled WTS to develop a structured and mature business/costing model from the basic pre-existing shared services model operating within the BC Government.

The WTS business / costing model was assessed against PwC's Charge Rate Calculation Process model as well as external research material (i.e. Gartner's IT Chargeback Model classification). Many aspects of the WTS business/costing model were found to be in line with the PwC model and leading industry practices for IT chargeback Models, including the following:

Service Delivery Agreements (SDA)	WTS Service Catalogue	Service Level Agreements (SLAs)
• Clearly define WTS services • Use client oriented language to define the WTS services • Consistent across all its constituent Ministries (including the Broader Public Sector) • Transparent in terms of pricing for the different types of services • Single point of entry for all the Ministries to access and order WTS services (the WTS CAS solution)	• Clear definition of the minimum lead times required for WTS to acquire services. • Detailed SDA templates are in place that detail all aspects of the services offered and supported by detailed break up of associated costs (Blue, Green and Orange) • All SDAs are agreed with and signed off by the client Ministries	• Formal SLAs in place • The SLAs are agreed with client Ministries • The SLAs are published on the WTS portal • Regular reports are generated and published to compare actual performance with the agreed levels as stated in the SLAs.

A secondary source of chargeback models was also applied. Based on the Gartner Group, which classifies IT chargeback models into seven categories with progressive levels of maturity and sophistication, the WTS business/costing model fits in Gartner's Service Based Pricing (SBP) classification (involves the use of service catalogs, market price comparisons and service level agreements).

Our assessment of the WTS Model identified three broad areas of improvements as follows: *(the findings are referenced to the detailed evaluation matrix in Appendix E):*

Areas of Improvement	Rating	Key Findings	Impact on the following scope objectives	Considerations for improvements
Design of the Model	(Yellow)	• Absence of an IT chart of accounts (1.a).	• Process used to validate costs/assumptions of the model.	• Consider introducing a detailed IT Chart of Accounts.
	(Yellow)	• Absence of advanced chargeback concepts (penalty and incentive pricing, peak- and off-peak pricing, (forecast/purchase commitment pricing , selective off-peak pricing, multi-level service catalogue) in the design of the WTS model (3.a)	• Long term sustainability of the model	• Consider introducing creative pricing strategies to incentivize and provide customers greater options to manage the demand (and hence costs) for IT services.

Areas of Improvement	Rating	Key Findings	Impact on the following scope objectives	Considerations for improvements
Process	(Yellow)	• Lack of cost benchmarking to support the cost baseline (1.c)	• Reasonableness of logic/assumptions used to build the model.	• Consider creating formal guidelines to ensure benchmarking of WTS cost performance on a periodic basis. Ensure that each WTS service is benchmarked once over a 2-3 year cycle.
	(Orange)	• Over recovery situation exists as of Sept 07. Absence of formal processes to treat over/under recoveries (5.a, 6.a)	• Process used to validate costs/assumptions of the model	• Formalize procedures to identify and correct any over/under recovery of WTS costs
	(Orange)	• Lack of formal processes to assess customer satisfaction. (6.b)	• Long term sustainability of the model	• Formalize the requirement to carry periodic (annual) customer feedback surveys
People	(Yellow)	• Dependence on external contracting resources and Managers of specific services to build the Model. (1.d, 4.a)	• Long term sustainability of the model	• Ensure that adequate WTS personnel have the required knowledge on the business/costing model without having to depend upon external contractors

Orange: partially effective management processes and weaknesses observed.
Yellow: effective management processes and some opportunities for improvements identified.
Green: leading practices are being followed.

In summary, while there are findings that impact each scope area under review, the more significant observations are around the processes used to validate the costs/assumptions of the model (findings 5.a, 6.a) and the long terms sustainability of the model (finding 6.b). Some of the findings are typical for IT organizations that have made large scale changes to its chargeback methodology and procedures. Typically, it takes around two budget cycles for the new a chargeback system to stabilize and produce consistent results.

Comparative Benchmarking

PwC's Comparative Analysis methodology, which includes service definitions and comparative benchmarks for various IT services, was used to conduct the benchmarking of the Application Hosting and Backup services. For the purposes of this review, the benchmarking of these two WTS services was done from two perspectives in order to specifically reflect the internal and vendor nature of WTS service offerings. These two perspectives are:

- Internal cost (ITO): provides data from a internal IT Budget/Spending and Costing analysis perspective; and

- Market price: provides data from a Market Pricing and IT Service Provider service structures perspective.

The following table outlines the results of WTS unit costs compared with peer group costs and price.

WTS Service Area (Service Definition)	Unit	Comparative Benchmark				Considerations for improvements
		WTS	*Low*	*Avg*	*High*	
Hosting • WTS provides an Application Hosting (Windows) service which is defined appropriately to comparable industry standard service offerings.	***ITO*** • CPU/month • Calculated based on # of CPUs, WTS costs on a per server basis	*	*	*	*	• WTS has the opportunity to further reduce service delivery costs by exploring consolidation strategies.
	Market Price • Server/month • As per WTS Final pricing schedule 07/08)	*	*	*	*	
Back up • WTS provides a Data Backup service which is defined appropriately to comparable industry standard service offerings.	***ITO*** • GB written/ month • based on 22TB backup volume	*	*	*	*	• WTS has the opportunity to reduce service delivery costs by repackaging this service (i.e., bundling with other service offerings).
	Market Price • GB written/ month • as per WTS Final pricing schedule 07/08	*	*	*	*	

*** "Economic Harm"**

In summary, for the Application Hosting service area:

- WTS charge-out rates (unit costs) fall within the range of industry benchmarks of respective peer group organizations providing similar services.

- Compared to market pricing (as per IT outsourcing service providers) WTS appears to be competitive (below market rates).

- The WTS Infrastructure Hardware spending is approximately 15% higher than comparable average, where the Software is virtually equal (0.04% lower).

In summary, for the Backup service area:

- WTS charge-out rates (unit costs) fall within the range of industry benchmarks of respective peer group organizations providing similar services

- Compared to market pricing (IT outsourcing service providers) WTS appears to be competitive (below market rate ranges).

- The WTS Infrastructure Hardware spending is approximately 9% lower than the benchmark average, where the Software spending is approximately 15% higher.

Improving processes for identifying and determining infrastructure requirements for new applications

The assessment focused on the current WTS practices in the following areas:

- Identification of the impact of new business application requirements on existing IT infrastructure;

- Integration of the incremental costs (of the new IT infrastructure) with the existing WTS costing / pricing model and assessing the impact on existing costing / pricing of services;

- Communication and acceptance of the changes to the costing / pricing of services by the impacted stakeholders (primarily the Ministries who will pay for the additional IT infrastructure).

The key findings and recommendations from the assessment of the process used for identifying and determining infrastructure requirements for new applications are described in the table below.

#	Process element	Rating	Considerations for improvements
1.	Identification of the impact of new business application requirements on existing IT infrastructure.	(Yellow)	• Produce overall capacity plans in order to better align requests for incremental IT infrastructure. This will enable WTS to better assess the impact of the new request on overall WTS capacity.
2.	Identification and involvement of the impacted stakeholders in the process of review and approval of incremental IT infrastructure requirements (both technical and financial approvals)	(Green)	• N/A
3.	Integration of the incremental costs (of the new IT infrastructure) with the existing WTS costing / pricing model and assessing the impact on existing costing / pricing of services	(Orange)	• Periodic reconciliation of actual spend to the cost estimates included in the business/costing model to ensure that the cost baselines driving the recovery process is kept current
4.	Communication and acceptance of the changes to the costing / pricing of services by the impacted stakeholders (primarily the Ministries who will pay for the additional IT infrastructure)	(Orange)	• Regular review of the recovery of 'Blue' costs, in order to proactively manage under recovery situations
5.	Post implementation reviews to evaluate the actual spend at the end of the project and to assess if any adjustments are required to be made to the WTS costing/ pricing model.	(Orange)	• Consider formalizing a post implementation review process that enables WTS to assess the realization of the planned impact (cost/performance) of the new additions/changes to the IT infrastructure.

Orange: partially effective management processes and weaknesses observed.
Yellow: effective management processes and some opportunities for improvements identified.
Green: leading practices are being followed.

Summary of Recommendations

The following is a summary of all the proposed recommendations discussed above. We have also indicated a proposed timeline to implement the proposed recommendations, where the timings range between immediate and medium/ longer term (6 to 18 months).

Scope Area	Recommendations	Proposed Timing to Implement	
		Immediate	*Medium / Long Term*
WTS Business/Costing Model	• Consider introducing a detailed IT Chart of Accounts.		✔
	• Consider introducing creative pricing strategies to incentivize and provide customers greater options to manage the demand (and hence costs) for IT services.		✔
	• Consider creating formal guidelines to ensure benchmarking of WTS cost performance on a periodic basis. Ensure that each WTS service is benchmarked once over a 2-3 year cycle.		✔
	• Formalize procedures to identify and correct any over/under recovery of WTS costs	✔	
	• Formalize the requirement to carry periodic (annual) customer feedback surveys		✔
	• Ensure that adequate WTS personnel have the required knowledge on the business/costing model without having to depend upon external contractors	✔	
Comparative Benchmarking	• WTS has the opportunity to further reduce service delivery costs by exploring consolidation strategies.		✔
	• WTS has the opportunity to reduce service delivery costs by repackaging this service (i.e., bundling with other service offerings).		✔
Improving processes for identifying and determining infrastructure requirements for new applications	• Produce overall capacity plans in order to better align requests for incremental IT infrastructure. This will enable WTS to better assess the impact of the new request on the overall WTS capacity.		✔
	• Periodic reconciliation of actual spend to the cost estimates included in the business/costing model to ensure that the cost baselines driving the recovery process is kept current.	✔	
	• Regular review of the recovery of 'Blue' costs, in order to proactively manage under recovery situations.	✔	

1 Background, Scope and Approach

1.1 Background

Shared Services BC – Workplace Technology Services (WTS) offers information technology infrastructure support services to the provincial government and the broader public sector in British Columbia. These services include network, hosting, application and workstation services. Within its program, WTS manages three ASD services – mainframe, payroll and workstation services.

In fall 2005, a review of the WTS organization was conducted and a series of recommendations were made. Based on these recommendations, the WTS Business Transformation Initiative (BTI) Project was launched to advance improved accountability, transparent pricing of services, and integrated business processes to support information management systems and client-centric services.

Over the last two years, WTS has seen several changes in the way it is managed and operated. These factors as well as a Treasury Board request have resulted in the need for an independent assessment of the WTS governance and performance framework.

The Ministry of Labour & Citizens' Services, with the help of the Internal Audit and Advisory Services Branch, Office of the Comptroller General, Ministry of Finance, has engaged PricewaterhouseCoopers (PwC) to conduct an independent assessment of the WTS governance and performance framework.

1.2 Scope

The scope of PwCs independent assessment includes the following three components:

A. **Review of the Business/Costing Model** to:

- Assess the reasonableness of the model's logic and assumptions;
- Assess the process used to validate the model's costs and assumptions; and,
- Evaluate the long term sustainability of the model.

B. **Comparative Benchmarking** of Application Hosting – Windows, and Backup Services, to:

- Determine whether there are comparable measures (private and public sector);
- Determine the reasonableness of the overall costs for service delivery; and,
- Validate the infrastructure costs as a percentage of the total service delivery costs (taking into account the complexity, size and volumes).

C. **Improving process for identifying and determining infrastructure requirements for new applications:** to review and determine potential ways to improve the existing processes.

1.3 Overall Approach

PwC conducted its assessment between September and December 2007. The following three phased approach was adopted to perform this review:
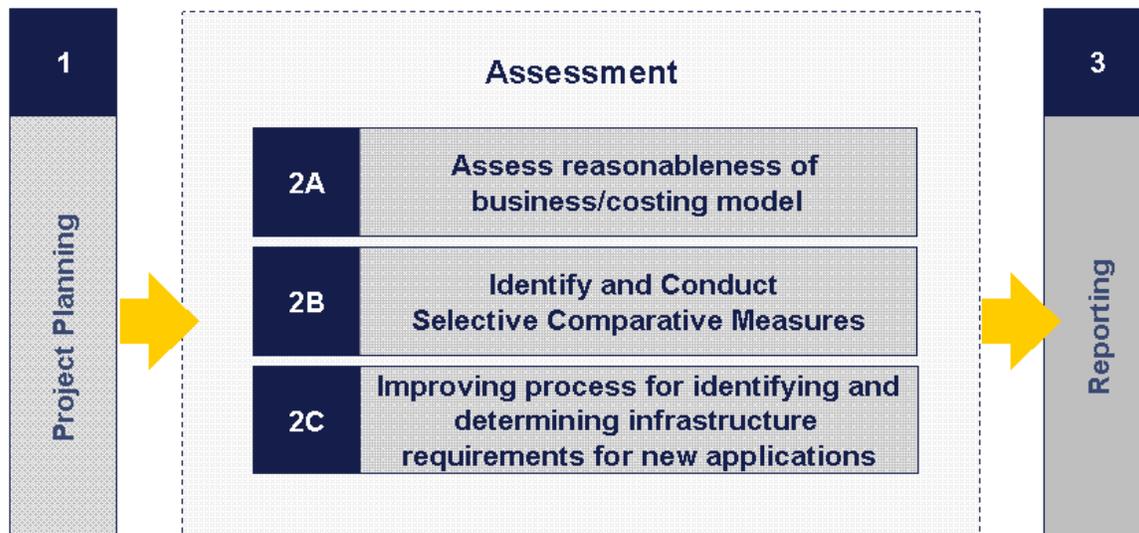
The data gathering process for the assessment included:

- Interviewing key WTS personnel involved in the initial design of the costing model, as well as personnel currently operating and managing the WTS services. Please refer to Appendix C for a list of WTS personnel interviewed.
- Reviewing documentation provided by WTS. Please refer to Appendix D for the list of documents reviewed.

1.4 Detailed Approach by Scope Area

1.4.1 Review of the Business/Costing Model

PwC approach to reviewing the current WTS business/costing model (the Model) focused on:

- Assessing the adequacy of documentation on the Model;
- Assessing the reasonableness of the Model;
- Assessing that WTS follows a standardized approach to perform chargeback for all business areas;
- Determining consistency with Government Policy principles; and,
- Assessing the WTS business/costing model against PwC Charge Rate Calculation Process model.

Charge Rate Calculation Model

The PwC Charge Rate Calculation Model (See diagram below) was used as the overall evaluation framework for reviewing the WTS business/costing Model. The Charge Rate Calculation model outlines the elements required to create a chargeback model. It consists of six Process Elements, each of which contains a series of Key Focus Areas that include considerations for the proper design of the chargeback model.
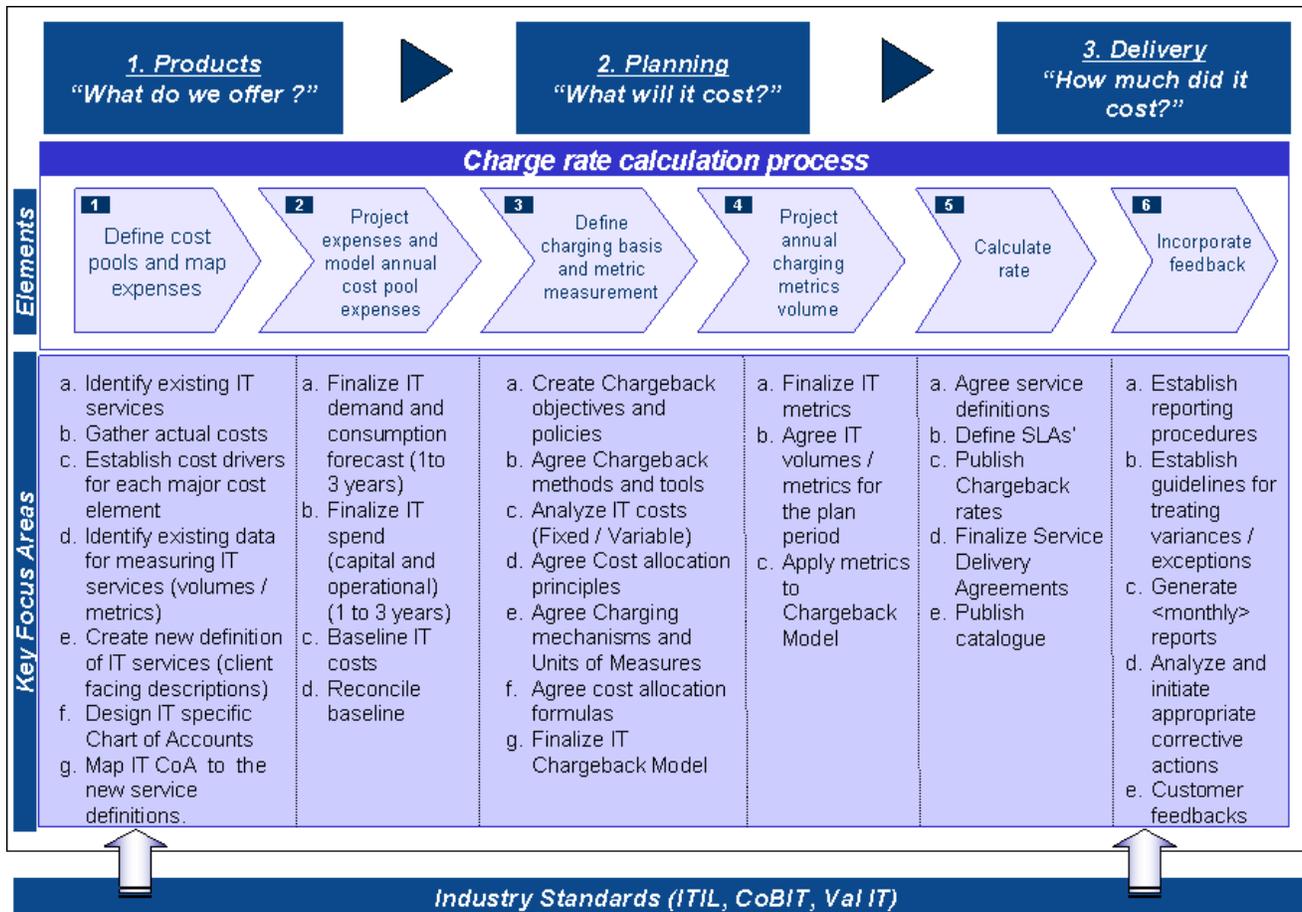
PwC review evaluated the design of the current WTS business/costing model against the Charge Rate Calculation Model.

PwC also used relevant industry frameworks that provide standards and best practices as part of its review. These industry frameworks included the following:

- **ITIL** *(IT Infrastructure Library)* – The Financial Management process – focused on the Charging, Rate Setting, Reporting and the links of Financial Management with the Capacity and Demand Planning processes;
- **Val IT** – focused on whether the Model helps in increasing the understanding and transparency of cost resulting in much better informed management decisions;
- **CoBIT** *(Controls Objectives for Information and related Technology)* – compliance with objectives stated in the Plan & Organize domain around managing the IT investment; and
- **External Research** – Gartner's view on the evolution of IT Chargeback Models.

We performed a high level review of the Business/Costing Model using these frameworks. We have only applied relevant extracts from the frameworks to the WTS Business/Costing Model to ensure that the model considers some of the best practices as stated in these frameworks.
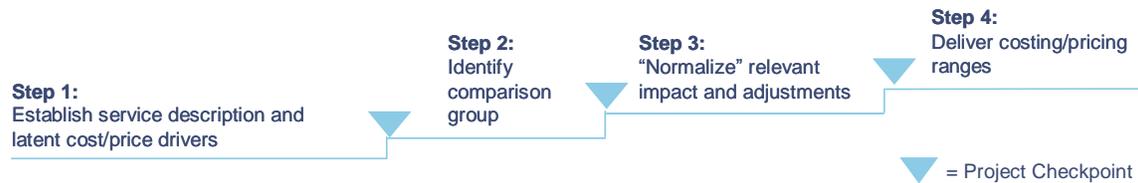
Auditing the day to day applications of the business/costing model was out of scope for PwC review.

1.4.2 Comparative Benchmarking

The PwC Comparative Analysis Methodology was used for evaluating and analyzing the following WTS service offerings:

- Application Hosting – Windows; and,
- Backup Services.

PwC's Comparative Analysis methodology consists of four steps as highlighted in the diagram below.

Step 1:
Establish service description and latent cost/price drivers

Step 2:
Identify comparison group

Step 3:
"Normalize" relevant impact and adjustments

Step 4:
Deliver costing/pricing ranges

= Project Checkpoint

Category	Latent Cost/Price Driver (service details compared to client environment)	Match / Difference (to comparison group)
Scope	Ops, Tech Support, DRP	Yes, Yes, Yes
Scale	Servers, CPUs, GBs	100, 15,000, 500…
SLA	7 x 24, P1, P2, P3	5 x 8, P1, P2
T & C (not applicable for costing)	3 – 5 years	3 – 5 years
Environment	Cap Plan, DBA, etc	Cap, DBA
Market Factors	Unionized	Not unionized
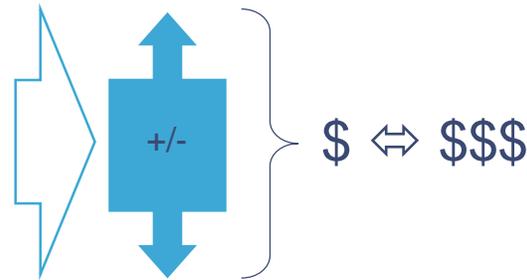
Step 1: Establish service description and latent cost/price drivers.
- Data gathering phase with the goal of establishing a description of the services in scope for the analysis – service profiles.

Step 2: Identify a comparison group.
- Selection of a peer group that provides similar services as captured in Step 1.

Step 3: Normalization of relevant impact and adjustments.
- Up-/downwards adjustments of peer group data to match most closely the target environment (service profile to be benchmarked)

Step 4: Deliver cost/price ranges.
- Calculation of the actual unit cost/price ranges using adjustment factors

WTS as a Service Provider and an Internal IT Organization (ITO)

Recognizing the internal nature of WTS services and using comparative metrics consistent with external market offerings, PwC benchmarked WTS Application Hosting and Backup services from two perspectives:

- Internal cost (ITO) : provides data from a internal IT Budget/Spending and Costing analysis perspectives; and
- Market price: provides data from a Market Pricing and IT Service Provider perspectives.

PwC uses this approach to compare the costs of services against other internal IT organizations, as well as, market service providers.

PwC Data Repository

PwC used its Data Repository for Comparative Benchmarking of WTS Application Hosting and Backup services. The comparison group used for benchmarking these WTS services consisted of a broad set of data points not older than 18 months.

The PwC Data Repository is comprised of two fundamental data categories:

- Internal IT Organization (ITO) Data: foundation for IT Budget/Spending and Costing analysis; and
- Service Provider Contracts and Proposals for IT Services: foundation for Market Pricing and IT Service Provider service structures.

The PwC Data Repository provides examples of relevant performance, support, and customer satisfaction measures and metrics, and is populated with data from on-going project and consulting efforts with the firm's global client base.

1.4.3 Improving processes for identifying and determining infrastructure requirements for new applications

PwC's approach to identifying improvements to the existing process for determining additional IT infrastructure requirements from new applications initiatives is comprised of the following:

- Reviewing documentation on current processes for infrastructure requirements; and,
- Assessing the current WTS process for determining infrastructure requirements against leading practices taking into consideration guidance provided by industry frameworks such as ITIL, COBIT, VAL IT and others.

The assessment focused on the current WTS practices in the following areas:

- Identification of the impact of new business application requirements on existing IT infrastructure;
- Identification and involvement of the impacted stakeholders in the process of reviewing and approving incremental IT infrastructure requirements (both technical and financial approvals);
- Integration of the incremental costs (of the new IT infrastructure) with the existing WTS Business/Costing model and assessing the impact on existing costing / pricing of services;
- Communication and acceptance of the changes to the costing / pricing of services by the impacted stakeholders (primarily the Ministries who will pay for the additional IT infrastructure); and
- Post project implementation reviews to evaluate the actual spend and assessing required adjustments to the WTS costing / pricing model.

2 Key Findings and Recommendations

This section details the key findings in accordance with the three components of PwC's assessment.

2.1 Review of the Business/Costing Model

Our review of the Business/Costing Model compared current WTS chargeback practices against the PwC's Charge Rate Calculation Model (listed on page 11). The results of our review are visually represented using the following definitions:

WTS developed a detailed 'Funding Model' to provide a consistent and logical approach for funding shared services (refer to Appendix A to view the WTS funding model). The Funding Model classifies WTS services into four distinct categories, and outlines processes for chargeback, journal vouchering and reporting for services offered. The Model was developed in consultation with the Ministries and by following the guiding principles for shared services chargeback established by the Senior Financial Officers' Council. The WTS business/costing model provides the costing data, rules and allocations that support the overall funding model.

The following aspects of the WTS business/costing model were found to be in line with PwC's Charge Rate Calculation Model and leading industry practices for IT chargeback Models:

WTS Service Catalogue
- Clearly defines WTS services
- Uses client oriented language to define the WTS services
- Is consistent across all its constituent Ministries (including the Broader Public Sector)
- Is transparent in terms of pricing for the different types of services
- Provides single point of entry for all the Ministries to access and order WTS services (the WTS CAS solution)

Service Delivery Agreements (SDA)
- Clear definition of the minimum lead times required for WTS to acquire services.
- Detailed Service Delivery Agreement templates are in place that detail all aspects of the services offered and are supported by detailed break up of associated costs (Blue, Green and Orange)
- All SDAs are agreed with and signed off by the client Ministries

Service Level Agreements (SLAs)
- Formal SLAs are in place
- The SLAs are agreed with client Ministries (including the Broader Public Sector)
- The SLAs are published on the WTS portal
- Regular reports are generated and published to compare actual performance with the agreed SLAs

In reviewing the WTS Business/Costing Model, PwC's used its Charge Rate Calculation Model (described on page 11) which lists of six Process Elements, each of which contains a series of Key Focus Areas that include considerations for the proper design of the chargeback model.

Our key findings and impacts are captured in an evaluation matrix summarized below (refer Appendix E for the detailed matrix). The matrix reviews the WTS Business/Costing Model against the six Process Elements and the Key Focus Areas of the PwC Charge Rate Calculation model.

Process Element	Rating	Key Findings	Scope objective impacted	Impact
1) Define cost pools and map expense accounts	(Yellow)	a) An IT specific chart of accounts has not been implemented.	• Process used to validate costs/assumptions of the model.	• The effective functioning of an IT Chargeback Model is reliant on availability of timely and sufficiently detailed cost and accounting information. • The lack of a detailed IT Chart of Accounts can potentially impact WTS' cost accumulation, reporting, monitoring and review of chargeback rates.
	(Yellow)	b) The mapping of the CAS chart of accounts (in the General Ledger) to the new WTS service definition was not completed.	• Reasonableness of the logic /assumptions used to build the model.	• Not mapping the General Ledger accounting information to actual consumption of WTS services will impact its ability to manage and report on WTS cost performance.
	(Yellow)	c) No cost benchmarking performed to validate and ensure that the cost baselines are in-line with industry trends. (*The Hackett benchmarking study done in 2005 was not a 'service based' benchmarking. The Hackett report covered benchmarking of CITS IT infrastructure at a high level that included Governance, Architecture, Sourcing, Complexity and Organization).*	• Reasonableness of logic/assumptions used to build the model.	• Not benchmarking the IT cost baseline with external sources will make it difficult for WTS to identify cost performance issues. • Identification of cost performance improvement initiatives is made difficult in the absence of benchmark data. • Lack of benchmark data means performance reviews lack quantitative measures to support other qualitative assessments of IT cost performance.

	(Yellow)	d) Dependence on external contracting resources and Managers of specific services to obtain data.	• Long term sustainability of the model.	• Lack of adequate in-house knowledge and expertise about the design of the WTS Model will make it difficult to maintain, adjust or recreate the Model in the event of large scale change requirements (for e.g., changes to the existing service delivery model, virtualization, etc).
2) Project expense by account and model annual cost pool expenses	(Green)	No findings. WTS successfully reconciled the cost baseline to the CAS General Ledger as of 30 June, 2006.	-	-
3) Define charging basis and metric measurement	(Yellow)	While, WTS was successful in designing a comprehensive costing/ pricing model, the current model, does not take into account some of the latest pricing concepts such as penalty and incentive pricing, peak- and off-peak pricing, forecast/purchase commitment pricing , selective off-peak pricing, multi-level service catalogue (standard vs. custom).	• Long term sustainability of the model.	• Fewer opportunities to positively impact user / buyer behavior without the use of such creative pricing approaches.
4) Project annual charging metrics volume	(Yellow)	Same as 1 d) above. Dependence on external contracting resources and Managers of specific services to obtain data.	• Long term sustainability of the model.	
5) Calculate rate	(Orange)	WTS has not formalized detailed procedures to handle over/under recovery of WTS costs (impact on rates, cost forecast, etc).	• Process used to validate costs /assumptions of the model.	• Absence of formal and transparent guidelines on the treatment of over/under recoveries makes it difficult to operate a stable IT chargeback environment. • Unresolved over/under recovery of IT costs can lead to issues in the IT costs forecasting or 'rate setting' process. • Large variations in chargeback amounts will make the WTS Model appear inequitable and can lead Ministries to lose their trust on WTS.

| 6) Continuous improvement of the model and assess customer feedback | (Orange) | a) WTS has not formalized detailed procedures to handle over / under recovery of WTS costs (impact on rates, cost forecast, etc).

 b) WTS has not formalized its procedures to handle continuous improvements to the Model (for instance, the actual WTS cost report for Sept 2007 is showing an unresolved over recovery situation).

 c) WTS has not initiated any process to obtain formal feedback from Ministries on their satisfaction with the new WTS service catalogue / pricing. | • Process used to validate costs /assumptions of the model.

 • Reasonableness of the logic /assumptions used to build the model.

 • Long term sustainability of the model. | • Absence of formal and transparent guidelines on the treatment of over / under recoveries makes it difficult to operate a stable IT chargeback environment.

 • Unresolved over / under recovery of IT costs can lead will lead to issues in the IT costs forecasting or 'rate setting' process.

 • Large variations in chargeback amounts will make the WTS Model appear as inequitable and can lead Ministries to lose their trust on WTS.

 • Lack of timely feedback on WTS cost performance from the Ministries can lead to issues remaining unidentified and unresolved. |

While this is the first year of operation of the WTS business/costing model, our experience indicates that:

- It requires approximately two budget cycles for a chargeback model to stabilize and produce consistent results; and,
- A formal process is required to continuously monitor and update the model for improving cost identification, and refining the measurement of metrics and cost allocation rules/formulas.

2.2 Comparative Benchmarking

PwC applied its Comparative Analysis Methodology to the following WTS service offerings:

- Application Hosting – Windows; and,
- Backup Services.

Each service offering was analyzed on the following cost/price drivers:

- Scope of Offering;
- Scale;
- Service Level Commitments;
- Terms and Conditions; and,
- Labor & Market Factors.

2.2.1 Comparative Benchmarking – Application Hosting Service

WTS and PwC worked jointly to capture the components of the Application Hosting service profile. Note: For a detailed view of the Service Profile refer to Appendix B.

2.2.1.1   Profile Key Findings

Key findings on the Application Hosting service by cost/price driver are summarized as follows:

Cost / Price Driver	Key Findings
Scope	The Scope of WTS provided services (operational processes and functions) are comparable to the market basket. For Storage (SAN implementations), PwC typically observes some base amount of storage included in the price. Otherwise storage is charged separately on a per Gigabyte (GB) basis.
Scale	WTS has a large scale of small (1-4CPU/Processors) servers in place. As this is likely technology driven (i.e., Blade servers) or business requirements driven (i.e., one application per server), it tends to offer the opportunity for server consolidation and virtualization efforts.
Service Levels	The WTS Custom Service approach for defining an Availability service level is unusual compared to a market service provider. However, the provided service levels for Problem Resolution are more stringent than the market basket.
Terms and Conditions	As expected, and typical in an internal IT organization, WTS has no minimum revenue commitment from its client base. However, the Stranded Costs Policy allows for WTS to recover costs even if a client decides to cancel a service before complete amortization. These Terms and Conditions come as close as possible to real services provider (vendor) behavior for an internal organization.
Labor and Market Forces	The 'market basket' consists of North American service offerings, where WTS provides this service Province wide.

Overall, the WTS service profile for the analyzed services is consistent with what PwC observes in other environments with similar service requirements.

2.2.1.2   Cost/Price Results Range Findings

The following table outlines the normalized results of WTS unit costs compared with peer group costs (ITO Cost) and price (Market Price) for application hosting services.

Market	ITO Cost		Market Price	
Unit	Industry	WTS	Industry	WTS
CPU/month	*	* (calculated based on # of CPUs, WTS costs on a per server basis)	n/a	n/a
Server/month	n/a	n/a	*	* (as per WTS Final pricing schedule 07/08)

Note: excluding Taxes, Storage Area Network, Disaster Recovery

"Economic Harm"

Costing Unit:

- The cost/CPU benchmark falls within range of the industry costs.
- Where the current WTS costing unit is cost per server the $/CPU metric is more aligned to the actual cost driver – the total number of Processor/CPUs of the server environment. The per server metric has worked well in a one-server-one-CPU configuration, but the correlation between operating cost and server box breaks down with the appearance of multi-processor servers.
- PwC recommends using $/CPU as a costing metric as a more accurate cost management (Note: for further detail see PwC paragraph: INTEL Servers: Cost/CPU).

Detailed Cost Category Comparison:

The following tables detail the individual cost categories for WTS and the correlating benchmark percentages of the peer group.

Cost Category	WTS	Benchmark Percentages
Hardware	*	*
software	*	*
Staffing Total S&B	*	*
Facilities	*	*
Training	*	*
Supplies	*	*
Other	*	*
Total Spend	*	*

"Economic Harm"

* *"Economic Harm"*

Our findings show that:
- The WTS HW spending is approximately 15% higher than comparable average
- The WTS Staffing spend is approximately 11% lower than comparable average

PwC recommends a more detailed analysis of the individual cost drivers to rationalize the above observations.

2.2.1.3   Market Price Comparison Findings

Charging Unit:

- The current WTS charging unit is cost per server.
- This metric is consistent with the way an IT Services vendor would charge for its respective services.
- For WTS the cost/server benchmark compared to market pricing falls below the range of comparable actual market prices.
- WTS, therefore, appears to be competitive (Note: WTS operates on a straight cost recovery basis vs. a market price which typically contains vendor profit and risk).

2.2.1.4   Summary of Comparison Findings – Application Hosting Services

Service Definition:

WTS provides an Application Hosting (Windows) service which is defined appropriately to comparable industry standard service offerings.

Service Delivery Costs:

WTS charge-out rates (unit costs) fall within the range of industry benchmarks of respective peer group organizations providing similar services. Compared to market pricing (as per IT outsourcing service providers) WTS appears to be competitive (below market rates).

Opportunity:

WTS has the opportunity to further reduce service delivery costs by exploring consolidation strategies.

2.2.2   Comparative Benchmarking - Backup Service

WTS and PwC worked jointly to capture the components of the Backup Service profile. Note: For a detailed view of the Service Profile refer to Appendix B.

2.2.2.1   Profile Key Findings and Observations:

Key findings on the Backup Service by cost/price driver are summarized as follows:

Cost / Price Driver	Key Findings
Scope	The scope of WTS services is consistent with the scope of services provided by the peer group.
Scale	No significant findings
Service Levels	WTS has stated 100% Availability as a target service level. Typically PwC observes service levels between 99.0% and 99.5% for backup availability in the industry. Backup vendors only provide 100% availability (backup and restore) if additional effort i.e. data validation and control of the environment is given and for a price premium.
Terms and Conditions	No significant findings
Labor and Market Forces	No significant findings

2.2.2.2   Cost/Price Results Range Findings

The following table outlines the normalized results of WTS unit costs compared with peer group costs (ITO Cost) and price (Market Price) for backup services.

Market	ITO Cost			Market Price		
Unit	Industry	WTS		Industry	WTS	
GB written /month	*	* (based on 22TB backup volume)		*	* (as per WTS Final pricing schedule 07/08)	

<p align="center">***   "Economic Harm"***</p>

Note:
- Excludes taxes,
- Assumes continuous back-up using disk first and then tape
- Includes off-site tape storage
- Assumes no data verification/tape certification

WTS offers its Backup Service as a standalone (not bundled) service. This means clients can choose to select this service independent of other service offerings (i.e. Hosting). This bundled approach gives more leverage to the service provider who then in turn can be more competitive.

PwC industry research shows that standalone backup services are typically offered for relatively small amounts of backup volume (<1-5TB). In most cases Backup Services are bundled in with Managed Server or Storage Area Network (i.e. SAN) offerings. For the Backup Services analysis PwC used peer data comprised of bundled and stand alone service offerings. The backup services of the bundled peers were normalized to a stand-alone environment for WTS comparative purposes.

ITO Cost Comparison

The tables below show a comparison of WTS with industry benchmark for ITO costs. WTS uses the $ /GB written/month metric to measure and charge for the Backup Service. Use of this metric is consistent with most industry standard offerings for backup services.

Cost Category	WTS	Benchmark Percentages
Hardware	*	*
software	*	*
Staffing Total S&B	*	*
Facilities	*	*
Training	*	*
Supplies	*	*
Other	*	*
Total Spend	*	*

* "Economic Harm"

* "Economic Harm"

Our findings indicate that:

- The cost/GB for WTS falls within the industry cost ranges for similar backup requirements.
- The WTS Hardware spending is approximately 9% lower than the peer group.
- The WTS Software spending is approximately 15% higher than the peer group.
- The WTS FTE Salary & Benefits number is 18%% higher than the peer group.
- WTS has a higher than average number of FTEs allocated to the back-up service (6.94 for WTS vs. 5.01 on average for the peers).

Market Price Comparison

Charging Unit:

The current WTS charging unit is $ per GB/month. This metric is consistent with the way an IT Services Vendor would charge for respective services.

Market Price:

For WTS the cost/GB benchmark compared to market pricing falls below the range of comparable actual market prices. WTS therefore, appears to be competitive (Note: WTS operates on a straight cost recovery basis vs. a market price which typically contains vendor profit and risk).

2.2.2.3   Summary of Comparison Findings – Backup Services

Service Definition

WTS provides a Data Backup service which is defined appropriately to comparable industry standard service offerings.

Service Delivery Costs

WTS charge-out rates (unit costs) fall within the range of industry benchmarks of respective peer group organizations providing similar services. Compared to market pricing (IT outsourcing service providers) WTS appears to be competitive.

Opportunity

WTS has opportunity to reduce service delivery costs by repackaging this service (i.e. bundling with other service offerings).

2.3 Improving processes for identifying and determining infrastructure requirements for new applications

In our assessment of the current WTS practices we have identified the following improvements for determining IT infrastructure requirements to support new application initiatives:

Process consideration / Key Findings	Impact	Rating	Considerations for improvements

Identification of the impact of new business application requirements on existing IT infrastructure.
 	
For Initial go-live of the new service catalogue / costing model in April 2007:
 	
• IT application needs for 2006-07 and 2007-08 were assessed and its related infrastructure technical/costing impact was estimated and included in the baseline WTS costing model. However, there has been no formal review of the planned purchase/decommissioning of applications with the actual purchases / decommissioning of applications that has been implemented since Apr 2007.
 	
For 'Net New' IT infrastructure requirements:
 	
• While there is a process to technically evaluate individual 'net new' requirements (by IAP – Investment Approval Process) on its own, there is no overall Capacity Management process in place within WTS that links the impact of the net new requirements on the overall existing WTS capacity. However, the following existing processes mitigates some of the risks in this area:
 	
  o The IAP committee has representatives from lines of business and Planning & Design who are familiar with the organization's technical capacity; and
 	
  o The IM/IT Planning cycle with Treasury Board staff, Office of the Chief Information Officer and WTS takes into account the overall infrastructure planning required to meet the ministries' major projects.
	Lack of a formal and comprehensive capacity management process can potentially lead to increased risks associated with:
	
	• The usage and performance of existing resources;
	
	• Sizing new requirements and its impact on existing resources;
	
	• Urgent, unscheduled changes;
	
	• Spending over budget on capacity needs.
		▯
		
		(Yellow)
			Creation of a formal Capacity Management process that consolidates application sizing, modeling, workload management, performance management considerations into a unified system/dashboard called the Capacity Plan. A Capacity Plan will help in analyzing the current situation and predicting the future use of IT infrastructure and the resources needed to meet expected demand for IT services.

Process consideration / Key Findings	Impact	Rating	Considerations for improvements
Identification and involvement of the impacted stakeholders in the process of review and approval of incremental IT infrastructure requirements (both technical and financial approvals) The Investment Approval Process (IAP) and the Client Process Advisory Team (CPAT) processes adequately identifies and involves the impacted stakeholders (including OCIO – Planning & Design)	None noted	(Green)	None
Integration of the incremental costs (of the new IT infrastructure) with the existing WTS costing / pricing model and assessing the impact on existing costing / pricing of services For Initial go-live of the new service catalogue / costing model in April 2006: • IT application needs for 2006-07 and 2007-08 were assessed and its related infrastructure costing impact was estimated and included in the baseline WTS costing model. • There is no formal process in place to reconcile the actual spend on new applications and additional IT infrastructure with the estimates included in the cost baseline. For 'Net New' IT infrastructure requirements: • While there is a process to evaluate individual 'net new' requirements by the Investment Approval Process (IAP) on its own, there is no process to link the impact of the net new requirement to the WTS costing baseline model. The IAP has begun to review changes to project costs greater than 10% of the original estimate. There is also a review process at the end of a project prior to the project being formally closed, but a verification of actual spend is not currently part of the review. Also, not all projects are selected for a formal review.	The WTS costing model will remain static with dated data that is not relevant and useful for making costing / pricing decisions.	(Orange)	Create of a formal process to maintain and update a repository of information pertaining to changes that needs to be made to the WTS costing model. For example, develop a formal quarterly data gathering process to collect data relating to: • IT infrastructure newly added / new purchases made (from WTS CAS solution); • Modifications made to the WTS IT infrastructure (from WTS operational reports) focusing on its impact on the WTS costing model (cost and metrics). A Semi-Annual process of updating the WTS costing/ pricing model with the data collected above.
Communication and acceptance of the changes to the costing / pricing of services by the impacted stakeholders (primarily the Ministries who will pay for the additional IT infrastructure) • Financial analysis is done as part of	There exists a potential for WTS to carry the risk of 'Blue' services (i.e., shared corporate functions) not being recovered *(Net new investments*	(Orange)	Implementation of the considerations listed above, viz., capacity planning and updating of the WTS costing model will provide the required data and

Process consideration / Key Findings	Impact	Rating	Considerations for improvements
the Investment Approval Process (IAP) submission checklist and is evaluated and endorsed when the Director, Corporate Operations signs off on the endorsement sheet. • Updating existing Service Delivery Agreements (SDAs) to reflect additional services and related costs is typically added as a necessary prerequisite required for the approval of an IAP. The SDA condition is removed (by WTS) only after the updated SDA has been signed off by the Client Ministry. • Green additions are charged directly to Ministries on a consumption basis. • Blue additions are allocated, so any costs that are not recovered by the 'Blue' costs recovery process would be dealt with at the ministry level as an under recovery. Additions to 'blue' services are risk managed within the overall ministry estimate.	*with no recovery guarantees)*		solutions in a timely manner to address this issue.
Post implementation reviews to evaluate the actual spend at the end of the project and to assess if any adjustments are required to be made to the WTS costing / pricing model. There is no formal requirement or process in place to conduct post implementation reviews of additions / modifications to existing IT infrastructure.	• WTS will lack the data required to adapt and learn from its past experiences.	▮ (Orange)	Consider formalizing a post implementation review process that enables WTS to assess the realization of the planned impact (cost/performance) of the new additions/changes to the IT infrastructure.

Appendix A - WTS Funding Model

WTS Funding Model

The WTS funding model was designed based on the Shared Services BC Funding Model. The WTS Funding Model is as follows:

Blue- Shared Corporate Functions (Chargeback Fixed)	Green – Common Services (Chargeback Forecast)	Orange – Additional / Optional Services (Chargeback Actual)
A significant change in the rates for each service is the separation of indirect overhead, network infrastructure and e-Government initiates from all IT service rates. These costs will be journal vouchered to Ministries based on a fixed annual cost	Services that are common across Ministries have been classified into this category. These services will be charged to ministries based on an annual fee calculated from a baseline of costs and volumes as at June 30, plus any forecasted increases above baseline. This will be journal vouchered on a monthly basis (1/12 of annual chargeback).	Services in this category are provided for ministries to order to meet their specific needs. The difference between additional and optional services is : Additional services have to be ordered through WTS and Optional services can be ordered with WTS or external vendors.
Examples: • Indirect Overhead • Network Infrastructure • e-Gov Initiatives • Corporate Applications • Security • Service Development	**Examples:** • Base Voice Service • Client Site Access Service • Workstation • Office Productivity Service • Hosting Service	**Examples:** • Domain Name • Registration Services • Conferencing Services

The main WTS Corporate Objectives being driven by the Funding Model are:

• Transparent on costs; • Facilitates move to accurate "break-even" chargebacks for services; • WTS Executive committed to managing the WTS costs to ensure no increase to ministries during the year • Includes CIO mandated initiatives.	• Ministries can influence their costs through management of Moves, Adds and Changes and volumes beyond service baseline • Annual chargeback to be forecasted each year through Service Delivery Agreement process • Corporate costs and consumption will be reported quarterly to appropriate client councils	• Services offered to meet unique needs of Ministries • Ministries have a high influence on costs to deliver these services.

Appendix B - Cost Comparative Profiles and Assumptions

i) Application Hosting – Service Profile Description

Assumptions

PwC made the following assumptions as part of gathering individual WTS cost categories and FTE numbers for the Cost Comparative Analysis:

- Hardware: Total amortization costs split 50/50. Hardware purchases, leases and maintenance (the split refers to a split between HW and SW);
- Software: Total amortization costs split 50/50. Microsoft Licenses, software leases, purchases and maintenance (the split refers to a split between HW and SW);
- Disaster Recovery: Internal Service charges; and
- Non Contract FI and Admin FTE (Finance, Administration and Management): 0.42 FTE represents Hosting admin. Corporate FTE support cannot be identified so an assumption of 1 FTE was made.

Market Basket Summary – Key Characteristics

PwC selected two sets of peers – one set for costs and one set for price. This is to reflect the WTS internal – cost driven mandate which requires internal IT organizations as comparators, as well as the WTS' external mandate – to operate as a service provider to other Departments and Agencies – which requires service provider offerings (i.e., contracts) to be used as comparators.

Hence, for this project, PwC used a comparison group with the following characteristics:

Category	Internal IT organizations (Cost)	Service Provider offerings (Service and Price)
Industries	Financial Services, Distribution, Retail Manufacturing, Public Sector	Financial Services Industry, Retail, Manufacturing
Service Offering Scale/ Size	Normalized to 2052 CPUs	Low: 968 Server High: 1044 Server Average: 979 Server
Service Offering Scope	All similar to WTS with full scope service	All similar to WTS with full scope service
Service Offering Geography/Concentration	North America	North America
Supported Environment	N, N-1	N, N-1
Applicable SLAs	98.5% - 99.8%	99.0% - 99.9%

Intel servers: Cost per CPU

PwC uses the cost per number of processors ($/CPU) as a metric to benchmark the costs of the WTS Application Server environment.

The rationale for using $/CPU is as follows:

- The dataset in the PwC database used for selecting comparable peers is rationalized based upon the number of installed processors. This selection was driven by the strong correlation between number of processors and annual operating cost for Midrange servers in a data center (Correlation factor of over 0.9); and
- The per server metric has worked well in a one-server-one-CPU configuration, but the correlation between operating cost and server box broke down with the appearance of multi-processor servers.

Server Operating Cost - Trending
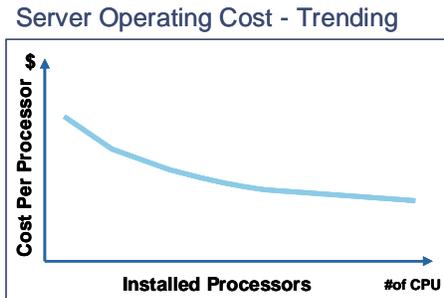
- The midrange server unit cost decreases as the operating environment gets larger.

Unix & Intel servers: Outlook for Future Units of Measure

- One potential option is to measure/capture the installed processing capacity in Megahertz (MHz). This would align with the thinking of potential mainframe like behaviour for midrange servers (i.e., MIPS or CPU hours).
- Another possible direction is Installed Images. This metric, and its correlation to costs, is the least mature due to the fairly recent technology of virtualization and its respective deployment.
- Multiple Metrics – where we benchmark according to two or more distinct metrics. For example, (1) cost per CPU & (2) cost per installed image. This approach would likely be used during any transition period towards an Installed Images metric.
- We will continue to monitor these metrics as to their correlation to data center operating costs in order to make a meaningful recommendation to WTS for future benchmarks.

Comparative Analysis – Industry Trends

Midrange – Intel Industry Trends

- Increase in deployment of multi-core Blade Servers:
  - Driven by economics related to acquisition cost, power consumption, heat and space.
- Server virtualization is mainstream computing:
  - Opportunities for new benefits in dynamic load balancing, charge-back models, and back-up / DR;
  - Predominant product is VMWare, but others such as Virtuozzo, Microsoft are gaining share;
  - Targets are non mission critical servers such as: File/Print and Test; and
  - Back-up is emerging.
- Direct attached Storage is being replaced by SAN:
  - Driven by hardware and management costs.

No.	Application Hosting Support Collection Elements		WTS Response	PwC Market Basket
Scope of Offering				
1	*Architecture & Planning*		Base Service	Yes
2	*Procurement*		Base Service	No, with exception of consumables
3	*Asset Management:*			Yes
4	*Financial Ownership of App Server HW*		Excluded (WTS owned)	Client owned
5	*Financial Ownership of Infra / Toolset Server HW*		Excluded	Client owned
6	*Performance mgmt*		Base Service	Yes
7	*Capacity mgmt*		Base Service	Yes
8	*Problem Management:*			Yes
9	*Storage mgmt*		Base Service, partial	Yes
10	*Change Management*		Base Service, partial	Yes
11	*Operations Services*	*7x24 monitoring*	Base Service	Yes
12		*Data Backups and Tape mgmt*	Related Service	Yes
13		*Off Site Tape Storage*	Related Service	Yes
14	*System Support Window :*	*5x8 Systems support (off hour pager)*	Base Service	
15		*5x12 Systems support (off hour pager)*	Related Service	
16		*7x24 Systems support*	Related Service	Yes
17	*Support Technologies/Tools*	*System Management Tools*	Base Service	Yes
18		*Remote Software Support*	Base Service	Yes
19		*Remote Operations Support*	Base Service	Yes
20		*SAN Implementations?*	Base Service, partial (or Related Service)	Typically some base amount included. Otherwise charged separately per GB
21		*High availability or Clustering?*	Base Service	Yes, to provide high service levels (>99.5% Availability)
22	*Production Support*	*Reports and Metrics (Low Med High)*	Base Service, partial. = Low	Medium
23		*Disaster Recovery Plan and Test support*	Related Service	Yes
24		*Disaster Recovery (Describe)*	Related Service	Partial
25	*Security Services*	*System login ID, user admin and mgmt*	Base Service, partial	Yes
26		*Antivirus*	Base Service	Yes

No.	Application Hosting Support Collection Elements			WTS Response	PwC Market Basket
27	*Application Support*			Related Service	No except for App Batch Monitoring and Scheduling
28	*DBA Support*			Related Service	No
29	*Bandwidth*			Base Service	No or Negotiated
Scale					
30		*Intel NT, 2003*			
31			*Small*	1089	
32			*Medium*		
33			*Large*		
34			*Enterprise*		
35			*Total Intel*	1089	979 (968-1044)
Service Levels					
36	*Server Availability Window*			7x24	7x24
37	*Overall Server Availability*			Custom Service	99.55% (99.0%-99.9%)
38	*Problem Resolution*		*Severity 1*	2 hours	4h
39			*Severity 2*	4 hours	24h
40			*Severity 3*	1 business day	48h
41			*Severity 4*	3 business days	
Terms and Conditions					
42	*Contract Term*			The Client is responsible for the costs for Client-specific hardware, software or additional agreements.	8.75y
43	*Minimum Commitments*			Per Service Cancellation policy. Client can't leave stranded costs behind. If there aren't any, then 30 days notice is required	Yes
44	*Service Level Penalties*			n/a	Yes
45	*% at risk*			n/a	10
46	*Service Level Incentives*			n/a	Yes
47	*Variable Pricing Mechanism (ARCs/RRCs/Other)*			n/a	Yes

No.	Application Hosting Support Collection Elements	WTS Response	PwC Market Basket
48	*Price escalation adjustments*	n/a	Yes
49	*Benchmark Clause*	n/a	Yes
Market Factors			
50	*Facilities (Physical, Floor Space, Etc)*	Base service	Yes
51	*Location(s) of provided services*	Vancouver/ Victoria	North America

ii) Back up Services – Service Profile Description

Assumptions

PwC made the following assumptions as part of gathering individual WTS cost categories:

- Hardware: 60% of total amortization costs allocated to Hardware. Allocated share of General Hosting costs **"Economic Harm".**

- Software: 40% of total amortization costs allocated to Software. Allocated share of General Hosting costs **"Economic Harm"**

Market Basket Summary – Key Characteristics:

PwC selected two sets of peers – one set for costs and one set for price. This is to reflect the WTS internal – cost driven mandate which requires internal IT organizations as comparators. As well as the WTS external mandate – to operate as a service provider to other Departments and Agencies which requires service provider offerings (i.e., contracts) to be used as comparators.

The backup services components for these environments were extracted and normalized to the WTS environment.

Hence, for this exercise PwC used a comparison groups with the following characteristics

Category	Internal IT organizations (Cost)	Service Provider offerings (Service and Price)
Service Offering Scale/ Size	Average 22TB daily back up volume	Average: 23TB daily backup volume
Service Offering Scope	All similar to WTS with full scope service	All similar to WTS with full scope service
Service Offering Geography/Concentration	North America	North America
Service Delivery Locations	1 data center location	Average of 2.25 locations
Applicable SLAs	n/a	99.0% - 99.5%

No.		Service Description		Response	PwC Market Basket	WTS Comments
Scope of Offering						
1	*Procurement:*		Purchase consumables (tapes)	Base Service	Yes	Included in infrastructure management and support
2			Inventory Management	Base Service	Yes	Included in infrastructure management and support
3			Configuration Management	Base Service	Yes	Included in infrastructure management and support
4	*Asset Management:*		Financial Management	Base Service	Yes	Included in infrastructure management and support

No.	Service Description			Response	PwC Market Basket	WTS Comments
5	*System Administration Services*		ID Management, Resource Permissions	Base Service	Yes	Included in infrastructure management and support
6			Capacity Management	Base Service	Yes	Included in infrastructure management and support
7			Problem Management:	Base Service	Yes	Included in backup management and support
8			Change Management	Base Service	Yes	Included in backup management and support
9	*Associated Midrange System Support -*		5x8 Systems support (off hour Pager)	Base Service	Yes	After hours emergency support for Priority 1 and 2 incidents only
10			7x12 Systems support	Base Service	Yes	After hours emergency support for Priority 1 and 2 incidents only
11			7x24 Systems support	Base Service	Yes	After hours emergency support for Priority 1 and 2 incidents only
12	*Support Technologies/ Tools*		Backup Management Tools	Yes	Yes	
13			Backup Technology Vendor	Yes	Yes	
14			Traditional Tape	Yes	Yes	
15			RAID Disk Technology Employed	Yes	Yes	
16	*Operating Systems*		Mainframe	NA		
17			UNIX	Yes	Yes	
18			Intel	Yes	Yes	
19			Other	NA		
Scal						
20			Number of backup jobs per month	75000		
21			Daily	2500	6 daily incremental, 1 weekly full	
22			Weekly	17500		
23			Monthly	75000		

No.	Service Description	Response	PwC Market Basket	WTS Comments
24	*Number of GBs per Backup*	See comments		Size of back up jobs vary, but total amount of backup daily is 22Tb
Geography				
25	*Number of Locations*	3	2.25	2 in Victoria and 1 in Vancouver
Service Levels				
26	*Overall Backup Availability*	Target 100%	99%-99.5%.Extra charge for Backup Validation	A standard service level for availability is not published for base service.
27	*Overall Restore Availability*	Target 100%	99%-99.5%	A standard service level for availability is not published for base service.
28	*Automated restore*	NA	One restore per month/customer	
29	*Event driven restore*	Yes		An authorized user may recover their own files from their server
30	*Time to Restore*	See comments		A standard service level for time to restore is not published for base service.
31	*Backup Retention Time*	90 days (Archival backup is a Service Option available at additional cost).	28-90 days (Archival function is a Service Option available at additional cost).	Archival backup is a Service Option available at additional cost.
Terms and Conditions				
32	*Contract Term*	Per annual Client forecast	Variable Terms and On-Demand	Per annual Client forecast
33	*Minimum Commitments*	Per annual Client forecast baseline	No	Per annual Client forecast baseline
34	*Service Level Penalties, % at risk*	N/A	No	
35	*Service Level Incentives*	N/A	No	

No.	Service Description	Response	PwC Market Basket	WTS Comments
Labor & Market Factors				
36	Unionized environment?	Yes	No	
37	*Location(s) of provided services*	BC	North America	

Appendix C - WTS Personnel Involved in the Assessment

No.	Name	Title	Organization
1	Brian Bowman	Executive Director, Business Strategy and Planning Services	WTS
2	Wendy Turcotte	A/Director, Corporate Operations Branch, Business Strategy and Planning Services	WTS
3	Corrie Barclay	External Consultant	WTS
4	Wendy Taylor	Executive Director, Cross Government Research, Policy and Practice	OCIO
5	Wency Lum	Director, Corporate Planning, Policy and Standards	Corporate Policy, Planning and Standards

Appendix D - List of Documents Reviewed

No.	Title of the document
1	WTS Service Catalogue 2006-07
2	Sample of a Service Delivery Agreement
3	Service Level Agreement – WTS Services
4	Costing Assumptions – V6 (used to build the WTS Costing Model)
5	WTS – 2007-08 Services Costing and Pricing Summary
6	WTS Service Delivery Stream – Financial Transformation project – Pricing Methodology
7	WTS Costing / Pricing Model (Final)
8	Rates and Lead for WTS Services (for Ministry Clients)
9	WFR Report – Actual WTS Recoveries (as of 30 Sept, 2007)
10	IT Roadmap – 2007-2001 (dated May 2007)
11	WTS – Strategic Business Plan 2006-07 to 2008-09
12	Gartner Benchmarking Results 2001
13	Hackett Benchmark Results 2004
14	Internal Service Achievements Reports
15	Vendor Management – IBM Service level Report
16	WTS – Key Performance Indicators 2006-2009
17	MLCS – Corporate Strategy Report 2006-07 (2nd Quarter update)
18	Detailed Budget Instructions 06-07
19	Investment Approval Workflow process and procedures
20	PD Organization Accountabilities.doc
21	Investment Approval june_22.pdf
22	AHIP Checkpt Review Apr 2006 final.ppt
23	BCEP Checkpt Review May 2006-1 3.ppt
24	MoFR_GIS.ppt
25	PD Org Mandate.ppt
26	Client Needs Assessment III.vsd
27	CPAT Terms of Reference v2.doc
28	Ministry Initiatives and Decom Plans for Fiscal 2007-08.xls
29	Projects v2.2 Oct 28 2005 master file-.xls
30	Copy of Data Centre Infrastructure Capacity Request Template_current.xls
31	45442 BN SATA purchase.doc
32	45464 - Chair Endorsement.doc
33	45464 BN AG Datacenter_v2 0.doc
34	45464 Pre-Initiation Checklist AG Datacenter.doc
35	Chair Endorsement - 45442.doc
36	Data Centre Infrastructure Capacity Request and Approval Process_current.doc
37	Pre-Initiation Checklist Cliff 45442.doc
38	Storage Capplan June 06 V2.doc
39	Shared File and Print v3.doc
40	Facilities June 26 2006 v2A.doc
41	Current data center load charts .xls

Appendix E - Detailed evaluation matrix for the evaluation of the WTS business/costing model

No.	Process / Process Element	Key Findings	Impact	Rating	Initial considerations

1	Define cost pools and map expense accounts
	Points of focus :
	• Identify existing IT services
	• Gather actual costs;
	• Establish cost drivers for each major cost element;
	• Identify existing data for measuring IT services (volumes/metrics);
	• Create new definition of IT services (client facing descriptions;
	• Design IT specific Chart of Accounts;
	• Map IT CoA to the new service definitions.
		a. An IT specific chart of accounts has not been implemented.	• The effective functioning of an IT Chargeback Model is reliant on timely and sufficiently detailed cost and accounting information to be available.
			• The lack of a detailed IT Chart of Accounts can potentially impact WTS' cost accumulation, reporting, monitoring and review of chargeback rates.
				(Yellow)	Leading practices recommend that chargeback models are supported by a detailed IT Chart of Accounts, to help IT organizations to identify, manage and report on its costs at a detailed level.
					
					Assess the potential to introduce a detailed IT Chart of Accounts. A detailed IT Chart of Accounts is typically structured to provide cost details on the following dimensions:
					
					  • Cost Source (business process, cost centre, site, location);
					  • Cost Type (capex, opex, non-financial);
					  • Cost Element (IT spend type, IT spend area, IT business function);
					  • Budget / Actual cost.
					
					A IT Chart of Accounts will enable WTS to collect and view its data in multiple dimensions:
					  • By business unit;
					  • By spend type;

No.	Process / Process Element	Key Findings	Impact	Rating	Initial considerations
					Total spend by business units/ spend types by business function.
		b. The mapping of the CAS chart of accounts (in the General Ledger) to the new WTS service definition was not done.	• Not mapping the General Ledger accounting information to actual consumption of WTS services will impact its ability to manage and report on WTS cost performance.	(Yellow)	*(We were informed that the mapping was completed subsequent to go-live).*
		c. No cost benchmarking completed to validate and ensure that the cost baselines are in-line with industry trends.	• Not benchmarking the IT cost baseline with external sources will make it difficult for WTS to identify cost performance issues. • Identification of cost performance improvement initiatives is made difficult in the absence of benchmark data. • Lack of benchmark data makes performance reviews lack quantitative measures to support other qualitative assessments of IT cost performance.	(Yellow)	Consider the creation of formal guidelines to ensure benchmarking of WTS cost performance on a periodic basis to enable quantitative comparison and enable discussions beyond cost and price data to define performance improvement opportunities. The guidelines should consider that benchmarking each WTS service once over a two-three years cycle.
		d. Dependence on external contracting resources and Managers of specific services to obtain data.	• Lack of adequate in-house knowledge and expertise about the design of the WTS Model will make it difficult to maintain, adjust or recreate the Model in the event of large scale change requirements (i.e., changes to the existing service delivery model, virtualization, etc).	(Yellow)	Ensure that adequate WTS personnel are trained and acquire the required knowledge on the business/costing model.
2	Project expense by account and model annual cost pool expenses **Points of focus:**	a. No findings. WTS successfully reconciled the cost baseline to the CAS General Ledger	n/a	(Green)	n/a

No.	Process / Process Element	Key Findings	Impact	Rating	Initial considerations
	• Finalize IT demand and consumption forecast (1 to 3 years); • Finalize IT spend (capital and operational) (1 to 3 years); • Baseline IT costs; • Reconcile baseline.	as of 30 June, 2006.			
3	Define charging basis and metric measurement **Points of focus:** • Create Chargeback objectives and policies; • Agree to Chargeback methods and tools; • Analyze IT costs (Fixed/ Variable); • Agree to Cost allocation principles; • Agree to Charging mechanisms and Unit of measure; • Agree to cost allocation formulas; • Finalize IT Chargeback Model.	a. While WTS was successful in designing a comprehensive costing / pricing model, the current model, does not take into account some of the latest pricing concepts like penalty and incentive pricing, peak- and off-peak pricing, forecast/purchase commitment pricing , selective off-peak pricing, multi-level service catalogue (standard vs. custom).	WTS will not have the ability to positively impact user/ buyer behavior with the use of such creative pricing approaches.	(Yellow)	As WTS conducts continuous improvements of the Model, consider the possibilities of introducing creative pricing strategies to enable Ministries to better manage their demand for IT services. In the long run this has the potential for achieving reductions in total IT spend as Ministries become more selective in terms of what and how much IT services they buy/consume.
4	Project annual charging metrics volume **Points of focus:** • Finalize IT metrics; • Agree to IT volumes / metrics for the plan period; • Apply metrics to Chargeback Model.	a. Dependence on external contracting resources and Managers of specific services to obtain data.	• Lack of adequate in-house knowledge and expertise about the design of the WTS Model will make it difficult to maintain, adjust or recreate the Model in the event of large scale change requirements (for e.g., changes to the existing service delivery model, virtualization, etc).	(Yellow)	Ensure that adequate WTS personnel are trained and acquire the required knowledge on the business/costing model.

No.	Process / Process Element	Key Findings	Impact	Rating	Initial considerations
5	Calculate rate **Points of focus:** • Agree to service definitions; • Define SLAs; • Publish Chargeback rates; • Finalize Service Delivery Agreements; • Publish catalogue.	a. WTS has not formalized detailed procedures to handle over/under recovery of WTS costs (impact on rates, cost forecast, etc).	• Absence of formal and transparent guidelines on the treatment of over/under recoveries makes it difficult to operate a stable IT chargeback environment. • Unresolved over/under recovery of IT costs can lead will lead to issues in the IT costs forecasting or 'rate setting' process. • Large variations in chargeback amounts will make the WTS Model appear as inequitable and can lead Ministries to lose their trust on WTS.	(Orange)	WTS should formalize detailed guidelines and procedures to identify and correct any over/under recovery of WTS costs. The guidelines should provide detailed, consistent and a transparent manner of addressing over/ under recoveries of WTS costs.
6	Continuous improvement of the model and assess customer feedback. **Points of focus:** • Establish reporting procedures; • Establish guidelines for treating variances /exceptions; • Generate <monthly> reports; • Analyze and initiate appropriate corrective actions; • Design and carry out a customer survey - to assess satisfaction with chargeback results; • Analyze results of customer surveys;	a. WTS has not formalized its procedures to handle continuous improvements to the Model (for instance, the actual WTS cost report for Sept 2007 is showing an unresolved over recovery situation). b. WTS has not initiated any process to obtain formal feedback from Ministries on their satisfaction with the new WTS service catalogue/ pricing.	• Absence of formal and transparent guidelines on the treatment of over/under recoveries makes it difficult to operate a stable IT chargeback environment. • Unresolved over/under recovery of IT costs can lead will lead to issues in the IT costs forecasting or 'rate setting' process. • Large variations in chargeback amounts will make the WTS Model appear as inequitable and can lead Ministries to lose their trust on WTS. • Lack of timely feedback on WTS cost performance from the Ministries can lead to issues remaining unidentified and unresolved.	(Orange)	WTS should formalize detailed guidelines and procedures to identify and correct any over/under recovery of WTS costs. The guidelines should provide detailed, consistent and a transparent manner of addressing over/ under recoveries of WTS costs. Assess the potential to introduce a detailed IT Chart of Accounts – that will enable WTS to identify and keep track of its costs at a very detailed level (refer to details in 1.a above). WTS should consider creating a formal process to carry periodic (annual) customer feedback surveys. The surveys should be designed and tailored around the use of the new WTS service

No.	Process / Process Element	Key Findings	Impact	Rating	Initial considerations
	• Initiate changes to chargeback procedures/rates (if required).		• Lack of timely feedback on WTS cost performance from the Ministries can lead to issues remaining unidentified and unresolved.		catalogue and WTS cost performance.

Appendix F - Detailed evaluation matrix for the evaluation of the processes for identifying and determining infrastructure requirements for new applications

No.	Process consideration	Key Findings	Impact	Rating	Initial Considerations

1	Identification of the impact of new business application requirements on existing IT infrastructure.	<u>For initial go-live of the new service catalogue/costing model in April 2007</u>:
		
		• IT application needs for 2006-07 and 2007-08 were assessed and its related infrastructure technical/costing impact was estimated and included in the baseline WTS costing model. However, there has been no formal review of the planned purchase/decommissioning of applications with the actual purchases / decommissioning of applications that has been implemented since April 2007.
		
		<u>For 'Net New' IT infrastructure requirements</u>:
		
		• While there is a process to technically evaluate individual 'net new' requirements by the IAP (Investment Approval Process) on its own, there is no overall Capacity Management process in place within WTS that links the impact of the net new requirements on the overall existing WTS capacity. However, the following existing processes mitigates some of the risks in this area:
		
		   o The IAP committee has representatives from lines of business and Planning & Design who are familiar with the organization's technical capacity; and
		
		   o The IM/IT Planning cycle with Treasury Board staff, Office of the
			Lack of a formal and comprehensive capacity management process can potentially lead to increased risks associated with:
			
			• the usage and performance of existing resources;
			
			• sizing new requirements and its impact on existing resources;
			
			• urgent, unscheduled changes;
			
			• spending over budget on capacity needs.
				⬛
				
				(Yellow)
					Best practices recommend the creation of a formal Capacity Management process that considers the following :
					
					• Application Sizing - determining the IT infrastructure needed to support new or modified services (supported with forecasts of workload);
					
					• Modeling - to address the 'what-if' question. to simulate or trend models to determine capacity requirements of services and determining the most optimal capacity solution;
					
					• Workload Management - is essential to do 'Modeling'. Deals with analyzing business drivers and their impact on IT resources;
					
					• Performance management - deals with measuring, monitoring and fine tuning performance of IT infrastructure.
					
					The above data/information, when consolidated, ideally in a single system/dashboard/database (typically referred to as the 'Capacity database'), leads to the development of a 'Capacity Plan'. A Capacity Plan will help in analyzing the current situation and predicting the future use of IT infrastructure and the resources needed to meet expected demand for IT services.

No.	Process consideration	Key Findings	Impact	Rating	Initial Considerations
		Chief Information Officer and WTS takes into account the overall infrastructure planning required to meet the ministries' major projects.			
2	Identification and involvement of the impacted stakeholders in the process of review and approval of incremental IT infrastructure requirements (both technical and financial approvals).	The Investment Approval Process (IAP) and the Client Process Advisory Team (CPAT) processes adequately identifies and involves the impacted stakeholders (including OCIO – Planning & Design).	None noted	(Green)	
3	Integration of the incremental costs (of the new IT infrastructure) with the existing WTS costing / pricing model and assessing the impact on existing costing/ pricing of services.	For Initial go-live of the new service catalogue / costing model in April 2006: • IT application needs for 2006-07 and 2007-08 were assessed and its related infrastructure costing impact was estimated and included in the baseline WTS costing model; • There is no formal process in place to reconcile the actual spend on new applications and additional IT infrastructure with the estimates included in the cost baseline. For 'Net New' IT infrastructure requirements: While there is a process to evaluate individual 'net new' requirements (by the Investment Approval Process (IAP)) on its own, there is no process to link the impact of the net new requirement to the WTS costing baseline model. The IAP has begun to review changes to project costs greater than 10% of the original estimate. There is also a review process at the end of a project prior to the project being formally closed, but a verification of actual spend is not currently part of the review.	The WTS costing model will remain static with dated data that is not relevant and useful for making costing / pricing decisions.	(Orange)	Consider creation of a formal process to maintain and update a repository of information pertaining to changes that needs to be made to the WTS costing model. For example, develop a formal quarterly data gathering process to collect data relating to: • IT infrastructure newly added / new purchases made (from WTS CAS solution); • Modifications made to the WTS IT infrastructure (from WTS operational reports) focusing on its impact on the WTS costing model (cost and metrics). • A Semi-Annual process of updating the WTS costing/ pricing model with the data collected above.

No.	Process consideration	Key Findings	Impact	Rating	Initial Considerations
		Also, not all projects are selected for a formal review.			
4	Communication and acceptance of the changes to the costing/pricing of services by the impacted stakeholders (primarily the Ministries who will pay for the additional IT infrastructure).	• Financial analysis is done as part of the Investment Approval Process (IAP) submission checklist and is evaluated and endorsed when the Director, Corporate Operations signs off on the endorsement sheet. • Updating existing Service Delivery Agreements (SDAs) to reflect additional services and related costs is typically added as a necessary prerequisite required for the approval of an IAP. The SDA condition is removed (by WTS) only after the updated SDA has been signed off by the Client Ministry. • Green additions are charged directly to Ministries on a consumption basis. • Blue additions are allocated, so any costs that are not recovered by the Blue costs recovery process would be dealt with at the ministry level as an under recovery. Additions to 'blue' services are risk managed within the overall ministry estimate.	There exists a potential for WTS to carry the risk of 'Blue' services (i.e., shared corporate functions) not being recovered *(Net new investments with no recovery guarantees).*	▮ (Orange)	Implementation of the considerations listed above, viz., capacity planning and updating of the WTS costing model will provide the required data and solutions in a timely manner to address this issue.
5	Post implementation reviews to evaluate the actual spend at the end of the project and to assess if any adjustments are required to be made to the WTS costing / pricing model.	There is no formal requirement or process in place to conduct post implementation reviews of additions/ modifications to existing IT infrastructure.	• WTS will lack the data required to adapt and learn from its past experiences.	▮ (Orange)	Consider formalizing a post implementation review process that enables WTS to assess the realization of the planned impact (cost/performance) of the new additions/changes to the IT infrastructure.

Appendix G - Gartner's View on IT Chargeback Models

* "Economic Harm"