Audit of the

Management of the Intranet

Final Report

January 2006

International Trade Canada
Office of the Inspector General
Audit Division (ZIV)

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EXECUTIVE SUMMARY

Background

The International Trade Canada (ITCan) Intranet is a corporate tool for the electronic dissemination of departmental communications, tools and services to all employees at Headquarters and the missions. The Intranet was established in order to provide a cost-effective, user-friendly means of internal communications. Initially, the Intranet Web site was developed by the Information Management Technology Bureau. The Intranet is used to disseminate documents such as departmental manuals and directives, Division Web sites, and Panorama broadcast messages. The Intranet also provides access to tools such as the on-line Department directory, and services through applications such as the Human Resources Management System (Peoplesoft).

The contents of the intranet are not "owned" by the Information Management Technology Bureau, nor is the establishment of an intranet site under any form of centralized "approving" organization within the departments. In addition, the separation of FAC and ITCan into two departments underscored the need to undertake a comprehensive audit of the intranet.

This audit was approved by the Departmental Audit and Evaluation Committee for 2004 - 2005 and was conducted during the period from November 1, 2004 to March 22, 2005. The Intranet was identified as a key management concern by the Chief Information Officer during annual management consultations, undertaken when planning departmental audits.

Conclusion

Overall, we believe this report will help management better understand and enhance its use of the Intranet as a corporate communications tool. The report also provides clear recommendations against which future spending on the Intranet can be assessed. The overall conclusion of the audit is that the department is not realizing potential returns on its investment in the Intranet.

The audit found that the overall management framework for the governance of the Intranet lacks a clear strategic direction. Inaccurate and outdated content on some Intranet Web sites has reduced user confidence in all Intranet content. There is a need to improve processes and quality controls for managing, maintaining and withdrawing content published on the Intranet. The audit revealed limited user awareness of the content available on the Intranet.

The audit noted differences in approach between the two departments in how content was managed. The audit notes that some users find navigation of many intranet Web sites difficult due to the lack of a structured, consistent approach on layout. Search engines are ineffective and frustrating, and the effective capacity of the network at some missions is not sufficient to access this information. Some missions (Paris, London, and Washington, etc.) had Intranet sites that were not compliant with the Official Languages Policy. The audit also raised issues related to security, Intranet technology and application consolidation, and tracking the costs of ownership.

The audit recommends establishing a governance structure, developing an Intranet strategy, implementing content standards and related quality controls, improving search functionality, ensuring missions have adequate effective capacity for their Intranet needs, and mitigating security risks related to Intranet content. The audit recommends that the DMT assign responsibility for the management of the Intranet to the Communications Bureau (CSM). To implement the recommendations, it is recommended that an Intranet Steering Committee and

an Intranet Editorial Board be established. This report assumes that there will be ongoing participation from the office of the Chief Information Officer (CIO) in all aspects of the emerging governance structure for the Intranet.

The audit observed strengths evident from the high reliability of the Intranet infrastructure, and best practices related to the management of the Horizons Intranet Web site at headquarters.

During audit briefings, we noted that the department has already taken concrete steps to establish a framework in which to implement key components of the report. As with any undertaking of this magnitude, the implementation of the recommendations should be phased and in consideration of the operational constraints of content owners.

Objectives

The objectives of the audit were to:

- To assess the overall management framework for the governance of the Intranet;
- To assess the efficiency and effectiveness of the Intranet implementation in meeting user requirements;
- To assess whether standards and policies for availability and integrity are being met; and
- To identify and promote best practices noted during the audit.

Audit Criteria

The audit was performed in accordance with Treasury Board Policy on Internal Audit and the requirements and guidelines outlined in "The Professional Practices Framework" of The Institute of Internal Auditors (IIA).

The audit criteria was based on applicable CobIT[1] requirements, as well as departmental and Treasury Board Secretariat policies and procedures (see Appendix C). Sufficient audit work has been performed and the necessary evidence gathered to support the conclusions reached in this audit report.

[1] Control Objectives for Information and Related Technology: Information Systems Audit and Control Association, see details Appendix C

MAIN POINTS

Governance and Overall Management Framework

- There is no executive level steering committee with the explicit mandate to establish strategy, develop policies, and ensure that they are implemented by operational management. Consequently, individuals will operate independently and make more narrowly-based decisions, resulting in an overall lower level of departmental effectiveness.

- There is no foundation strategy which would link the overall departmental goals to the goals and objectives for the intranet, and to policies for management of information content and of the intranet infrastructure. This lack of direction is the root cause of many of the other problems observed during this audit. Furthermore, it inhibits the ability of the existing management structure to address and resolve these problems.

Management of Content

- All additions to the Horizons Intranet website are funnelled through the Horizons Team, comprised of two TCS staff, who verify that the content is compliant with content rules, and that it is "useful, actionable and relevant to Trade Commissioner staff at posts."

Cost of Ownership

- The cost of ownership related to managing, publishing, maintaining, and retiring Intranet Web site content is not being tracked. Consequently, governance of the intranet must be performed without a key piece of information to support management decisions and priority determination. The Horizons website has realized economies through its use of both departments' development and hosting environments. And, the implementation rules and the widespread adherence to Intranet content rules by content owners has resulted in process stability and a reduction in the ongoing level of effort by the Horizons Team. The Horizons Team, comprised of two FTEs two years ago, now averages approximately one FTE's time. A 2003 survey of Trade Commission Service employees concluded that staff do use the Horizons Intranet site and that it saves them time. The communication capabilities of the Horizons content were also described by several auditees as an example of information sharing and best practices. Content published on Horizons provides a self-serve tool that managers and staff can use to obtain information, thus eliminating the need to contact people at Headquarters (i.e. time and therefore cost savings). However, the full cost of ownership for Intranet content is not tracked. Without such cost figures ITCan management must define priorities and allocate resources among competing corporate priorities with less than complete information.

Effectiveness of Search Engine

- The configuration of Search Engines on the Intranet is ineffective. It currently involves several separate, non-integrated engines that are implemented in an inconsistent manner. The result to the user is slow operation, incorrect results, and overall frustration. This, in turn, leads users to seek their information through less efficient means, such as manual searches, paper searches, or personal contact.

Intranet Application Development Technologies and Environments

- There may be opportunities to reduce Intranet application development costs through harmonizing application development technologies and environments.

Availability of Intranet to Missions

- Users at some missions are unable to utilize or utilize efficiently, Intranet applications and work tools which are commonly available to other users.

Intranet Security

- The lack of quality controls on material being published to the Intranet has management concerned that there may be sensitive information being published on the Intranet that may individually or collectively compromise security.

Meeting Standards for Availability and Integrity

- The integrity of the content of some of the reviewed Web sites is low, which exacerbates the efficiency and effectiveness problems noted elsewhere in this report.

AUDIT APPROACH

Audits are performed to provide management with assurance that control objectives are being met, to identify where there are significant control weaknesses, to substantiate the resulting risks, and to advise management on necessary corrective actions.

1.1 Scope

The scope of the audit included both the ITCan and FAC Intranets. The audit addressed the areas of:

- Governance and overall management framework,
- Satisfaction of user and business requirements,
- Ongoing costs of ownership
- Accuracy and currency of content, and
- Availability and integrity of systems.

1.2 Project Deliverables

The audit deliverables and key audit activities included:

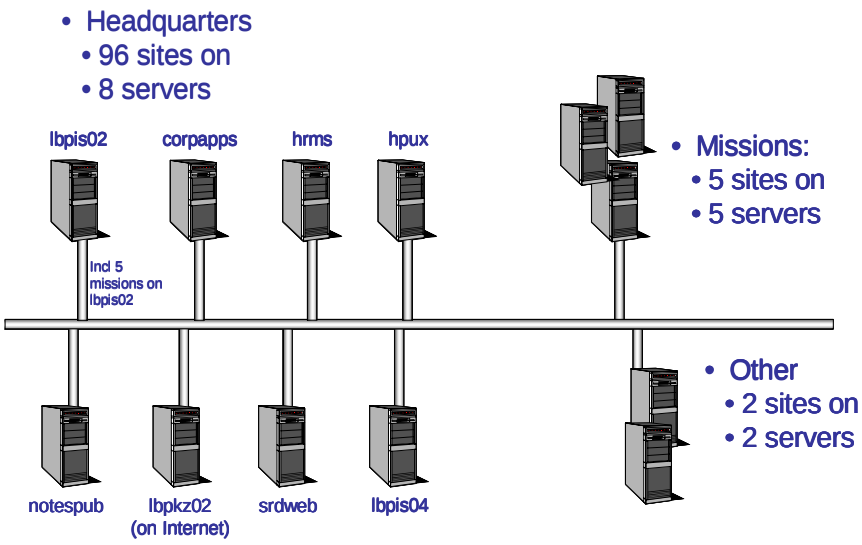
- **Project Plan**: a detailed project plan identifying deliverables, milestones and resource usage
- **Auditee Selection and Interview Coordination**: interviews were arranged and conducted with thirty-two auditees
- **Audit Program Design**: an audit guide linking audit criteria with audit objectives was developed and applied
- **Interview Question Design**: interview questions based on the audit objectives and criteria were prepared and applied
- **Auditee Interviews**: professional audit interviews were performed
- **Technical Analysis**: an automated Web site analysis tool was used to derive specific Intranet technical and performance metrics
- **Management Briefings**: audit findings and recommendations were presented and briefing notes maintained
- **Audit Report**: a draft report was prepared that identifies areas of concern with clear linkages between observations, cause and effect and recommendations
- **Working Papers**: working papers, interview notes and analysis documents were prepared and maintained electronically

1.3 Sampling Technique and Technical Analysis

A structured sampling approach was used to ensure that the sample represented a broad cross section of Intranet stakeholders, content owners, users and technicians. Although the audit did not survey a large number of managers or employees, interviews were supplemented with the use of electronic tools which allowed testing of Web sites not possible using a manual approach.

“Watchfire”, an automated Web site analysis tool, was used to derive specific Intranet technical and performance metrics, including dead links and the efficiency of search engines.

The ninety-six (96) Web sites examined during the audit resided on the following eight (8) servers at headquarters and are depicted on the high level network diagram below:



Intranet Servers Audited

1.4 Interviews

Detailed interviews were conducted with a sample of Intranet stakeholders, including users, Intranet content owners, webmasters, division and Departmental management. Some interviewees had several roles related to the Intranet (e.g., webmaster and Intranet user) and received multiple audit questionnaires during the interview.

A list of interviewees is provided in Appendix A.

The primary server, lbpis02, contained most of the Intranet Web sites audited, including the Panorama homepage which (at the time of the audit) was Foreign Affairs Canada's primary Intranet Web site. Many Intranet Web sites are accessed through links on the Panorama homepage, including Web sites residing on other network servers. The primary Intranet server (lbpis02) is also host to Horizons and to five (5) mission sites (i.e., Beirut, Brussels, Belgrade, Manilla, Oslo). The audit also reviewed five (5) other missions on other servers (i.e., Tokyo, New Delhi, Washington, London, Paris), and two other sites on two other servers on the Intranet.

The number of sites audited on each server is listed in the table below.

Server	URL	Primary Role	Total Sites
lbpis02	http://intranet	Horizons PLUS others	**70**
lbpk01	http://corpapps	EQAMS, PubReg, Directory	**3**
160.106.180.189	http://hrms-sgrh.dfait-maeci.gc.ca	PeopleSoft	**1**
lbpcat01	http://lbpcat01.capps	CATS, Tech Library	**1**
lbpk06	http://notespub01.dfait-maeci.gc.ca	Competitions, Acq Pol DB	**2**
albertpr	http://srdweb	Property, Materiel, Mail	**1**
lbpkz02 (on Internet)	http://pubx.dfait-maeci.gc.ca	Pubs Catalog	**1**
lbpis04	http://intranetapps	Various Applications	**17**
TOTAL			**96**

1.5 Planning and Monitoring

A detailed audit plan identified audit activities and the audit schedule. The status of the audit was monitored through weekly audit team meetings and through bi-weekly status reports. These meetings also provided an opportunity for the audit team to leverage ZIV organizational knowledge and guidance.

DETAILED FINDINGS

1.0 Governance and Overall Management Framework

1.1 Governance of the Intranet

There is no executive level steering committee with the explicit mandate to establish Intranet strategy, develop related policies, and ensure that they are implemented by operational management. Consequently, individuals will operate independently and make more narrowly-based decisions, resulting in an overall lower level of departmental effectiveness.

There is no foundation strategy which would link the overall departmental goals to the goals and objectives for the Intranet, to the policies for management of information content, and to the Intranet infrastructure. This lack of direction is the root cause of many of the other problems observed during this audit. Furthermore, it inhibits the ability of the existing management structure to address and resolve these problems.

The lack of clarity regarding the fundamental purpose and role of the ITCan/FAC Intranet causes conflicting understanding and interpretation within the managers and staff. This, in turn, creates inefficiencies through duplication, conflicts, and unmet user needs.

Many Intranet content owners identified the need for an Intranet Steering Committee that would establish the vision and strategy for the Intranet. It was suggested that the vision state the purpose of the Intranet and how Intranet content can assist in achieving corporate objectives.

The lack of a clear governance structure for ITCan/FAC Intranet content is manifested in several ways:

- the lack of clear objectives and priorities for ITCan/FAC Intranet initiatives,
- an unclear strategy and guidance on how to meet objectives,
- undefined strategic and operational roles and responsibilities for ITCan/FAC Intranet content,
- uncoordinated and inconsistent efforts by Divisions who use the ITCan/FAC Intranet as a communication tool,
- undefined Web site and application development standards, and
- poorly defined user needs and inadequate standard requirements for Intranet applications (e.g., there are no defined server standards for externally developed applications).

An unclear understanding of the role and purpose of the ITCan/FAC Intranet has contributed to difficulties in establishing priorities, inefficient decision making, and significant variations in the quality of ITCan/FAC Intranet content. Although Intranet infrastructure operates efficiently, the content (material) on the ITCan/FAC Intranet is not being effectively used to support internal communications. This results in organizational inefficiencies.

Without a defined role and purpose for the Intranet, decisions may be based on unclear priorities and effort may be expended on initiatives that do not relate to making the ITCan/FAC Intranet a more efficient and effective corporate communication tool. However, defining the role and purpose of the Intranet will not yield benefits unless it is clearly communicated to managers and staff with Intranet responsibilities.

The Intranet is where users search for answers to their questions. Its effectiveness is based on how well it communicates information to users. The Communications Division (CSM) currently

manages the Department's Internet Web site. Like the Department's Internet site, the Intranet should be managed by communications experts.

There is a need for a high level strategy for the Intranet that clearly defines the role and purpose of the Intranet as a corporate *communications tool*. Communication paths may be between individuals, between departments, between departments and individuals, and between managers and staff, etc. The strategy and governance structure for the Intranet should address:

- the corporate vision and role of the Intranet as a communications tool,
- the roles and responsibilities associated with the Intranet and its content, including responsibilities related to Intranet infrastructure,
- policies and procedures related to the publishing, maintenance and removal of Intranet content,
- Intranet design standards and guidelines to achieve communication objectives,
- the priorities and balance of technical and user/communications priorities, and
- the quality control and quality assurance practices (e.g., review points, approval authorities, etc.).

The Horizons Intranet Web site was observed to have a clearly communicated role and purpose. Its mandate is to support ITCan personnel in the field with "usable and actionable" content. Its policies and standards are defined by a committee of stakeholders, and quality controls are implemented by the Horizons Team. The audit found that Horizons content was current, consistent with user need, and widely used by Trade Commission Service employees.

Recommended that:

1.1.1 DMT assign responsibility for the management of the Intranet to CSM. This recognizes the Intranet as a corporate communications tool.

1.1.2 CSM set-up an Intranet Steering Committee that is executive level and broadly based. The Steering Committee should clearly define:

- **the role and purpose of the Intranet as a corporate *communications tool*,**
- **the policy for operational governance,**
- **the policy for content management, and**
- **the policy for design standards.**

Action and Time Frame

1.1.1 CSM has accepted responsibility for the management of the ITCan Intranet content.

Time Frame: Completed.

1.1.2 A co-chaired ITCan/FAC Steering Committee has been initiated and Terms of Reference have been drafted. Additional membership requirements will be determined with the CIO upon approval of Terms of Reference.

Time Frame: Terms of Reference were completed on December 15, 2005.

1.2 Management of Intranet Content

The content of the Intranet is not regulated by consistent operational-level management direction and controls, which allows considerable variation across Intranet sites and development environments. Web site variation leads to user inefficiencies and dissatisfaction, while the variety of development environments contributes to economic inefficiencies.

The extent of quality control and the adherence to existing Web site design guidelines are very limited resulting in significant variation across Intranet Web sites.

The lack of clarity regarding the standards for ITCan/FAC Intranet Web site layout and appearance leads to user inefficiencies, typically in the form of time lost due to unfamiliar navigation styles, unusual site layouts, and inconsistent page design conventions. Many users suggested the need for a more common structure and appearance to ITCan/FAC Intranet Web sites in order to reduce the learning curve and improve usability. The efficiency of users is diminished when they are required to learn new Web site layouts. Similarly, development costs are increased as time is spent designing new Intranet layouts.

Existing style guidelines are not followed because they are not considered by webmasters to be adequate or compliant with common Internet conventions. Divisional Intranet Web sites, however, could reasonably be expected to follow standards for “look and feel”. Illustrations of some Intranet Web site variation include:

Similarly, this variation of appearances exists among mission Intranet Web sites, including those residing on the main Intranet server:

However, the audit team noted that SMD and Horizons have created working groups of content owners that establish operational rules, implement quality controls and manage content of Intranet sites. The Horizons Editorial Board meets once every two months to review site management and performance issues (e.g., usability of content, usage metrics, proposed changes to processes, etc.). All additions to the Horizons Intranet Web site are funnelled through the Horizons Team, comprised of two TCS staff, who verify that the content is compliant with content rules. The audit of the Horizons Intranet Web site confirmed that this approach to content management was effective in ensuring that Horizons content is "useful, actionable and relevant to Trade Commissioner staff at posts". Pages on the Horizons Intranet Web site were also observed to be fairly homogenous.

The criteria and management controls for publication of content to the ITCan/FAC Intranet are inadequate. The responsibilities for establishing management controls and monitoring compliance are not effectively defined and implemented. Without clear criteria and management controls governing publication of content to the Intranet, ensuring the consistent application of departmental protocols is difficult.

The Department would benefit from the establishment of an Intranet Editorial Board. Editorial Board membership would be comprised of webmasters and content owners from stakeholder divisions, or their representatives, from Divisions with significant content on the ITCan/FAC Intranet. The development and implementation of policies and standards by the Intranet Editorial Board should acknowledge the time and budget constraints of Intranet content owners. A phased implementation approach is appropriate.

Recommended that:

1.2.1 CSM should establish an Intranet Editorial Board. Its mandate would be:

- **to set policies for management of content of Intranet sites,**
- **establish operational rules for Intranet content, and**
- **ensure compliance to established rules.**

Action and Time Frame

1.2.1 The framework for an Intranet Editorial Board has been drafted for submission to the Steering Committee when the ToR has been accepted by CSM, BCD, and the CIO.

Time Frame: Underway, pending approval of the ToR.

1.3 Cost of Ownership

The cost of ownership related to managing, publishing, maintaining, and retiring Intranet Web site content is not being tracked. Consequently, governance of the Intranet must be performed without a key piece of information (i.e., content management costs) that would support good management decisions.

There was interest by senior management in knowing the costs of ownership related to the Intranet so that resources could be better justified or optimized. However, audit interviews clearly indicated that there were no defined processes for determining and tracking the total cost of ownership for the Intranet. The lack of cost data precludes the opportunity to calculate return on investment or undertake comparative benchmarking against other organizations over the longer term.

The only information related to cost of Intranet ownership that was available during the audit were anecdotal estimates. Isolated instances where costs associated with the Intranet were known included: the budgeted base costs for SXED, the costs of in-house (SXED) application development (tracked through a cost recovery program), the costs of contracted Intranet application or Web site development projects, the costs of corporate assets (hardware and software) used to manage the Intranet, and the full-time equivalent (FTE) allocations to the development and maintenance of some Intranet Web sites. For example:

- SXED application development cost recovery is limited to development and QA resources directly working on the development project. The client is not charged for architecture input, manager time, infrastructure overhead, etc. The 2004 budget estimated the base costs for SXED to be $2.1 million and the cost recovery budget to be $1.3 million.
- Some managers who used external contractors quoted the amount paid for the design and development of their Intranet site.
- Intranet maintenance costs ranged from two FTEs each working half time to maintain the Horizons Intranet site, to an estimate of 20 to 25% of an FTE to maintain a site.

The audit observed that for those Intranet development projects where costs had been tracked, there was often a failure to consider the true cost of ownership (e.g., ongoing maintenance of content, technical upgrades/support, etc.).

Without measures of the cost of ownership for Intranet content, management must define priorities and allocate resources among competing corporate priorities with less than complete information.

Recommended that:

1.3.1 CSM, through the Intranet Steering Committee, implement processes to capture the costs of managing Intranet content.

1.3.2 CSM, through the Intranet Steering Committee, track and regularly review the costs of managing Intranet content and report to the Executive Committee.

Action and Time Frame

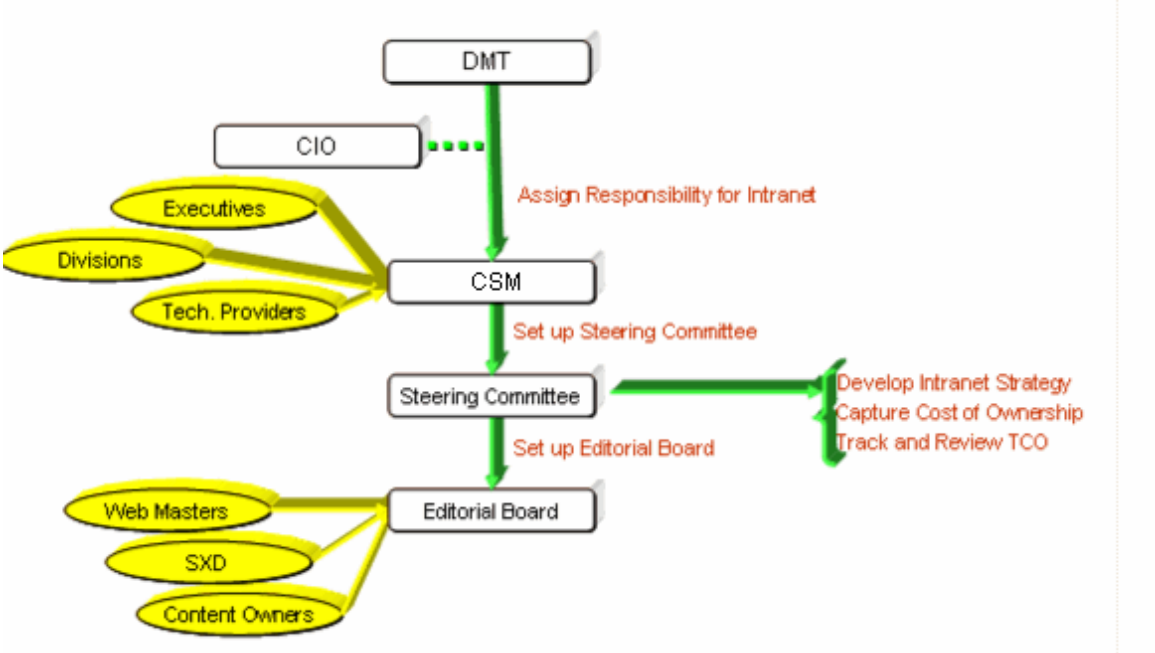
1.3.1 CSM will report on the resources and expenditures that are incurred through the Communications Bureau.

Time Frame: Underway.

1.3.2 The Steering Committee will track costs to the Communications Bureau for management of the Intranet to CSM prior to reporting to Executive Committee.

Time Frame: First report will be delivered to CSM end of April 2006.

Summary of Management Recommendations



2.0 Best Practices

This section identifies those practices which ZIV considers to be best practices.

2.1 COBIT and ITIL Practices for IT Management

The Intranet should be considered another Information Technology (IT) service and, therefore, should be managed according to IT management best practices. Control Objectives for Information Technology (COBIT) has been developed as a generally applicable and accepted standard for good practices for IT control. COBIT is based on existing Information Systems Audit and Control Foundation (ISACF) Control Objectives enhanced with existing and emerging international technical, professional, regulatory and industry-specific standards. Examples of best practices and further information on COBIT are contained in Appendix C. ITIL (IT Infrastructure Library) is a widely accepted approach to IT Service Management.

2.2 Compliance with the Official Languages Policy

The Headquarters based Intranet Web sites audited were compliant with the Official Languages Policy. The noncompliance to the Official Languages Policy was limited to some mission sites.

2.3 Horizons Intranet Web Site

The management framework of the Horizons Intranet Web site exemplifies several best practices. For example, the Horizons has clearly communicated that its purpose is to support Trade Commissioner personnel in the field with “usable and actionable” content. The Horizons Intranet site was based on a comprehensive analysis of user needs, and its Intranet Advisory Board regularly reviews performance metrics. A contact person is identified on each Horizons Intranet Web site making it easy for users to ask questions or provide feedback. Processes have been implemented for the ongoing management of new and existing content on the Horizons Intranet, and operational working groups actively manage content to ensure it is usable and accurate. The launch of the Horizons Intranet Web site was accompanied by considerable publicity and education. High levels of user awareness of content increase the likelihood published content will be used, therefore, improving the returns on the investment in the Intranet.

APPENDIX A - Audit Participants

Formal audit interviews were performed with the following participants[2]:

Position	Organization
Head, Publishing Service and Intranet Webmaster	SXE
Trade Commissioner, Overseas Operations	TCS
Deputy Director, Information Organization and Disposition Services	SXKI
Communications Strategist, Office of ADM Human Resources	MSV
Account Manager, Client Liaison and Partnering Division	SXEC
Senior IMT Resource Analyst	SXM
CFSI Webmaster	CFSM
Information Technology Advisor, Management Services Division	XDM
Team Lead (AMS service Desk)	SXEO
Lead Internet/Intranet Web Systems Analyst	
Acting CIO and DG Information Management and Technology Bureau	SXD
SXE-Client Services	SXEP
Acting Deputy Director, Application Operation	SXEO
Deputy Director, Application Development	SXED
Deputy Director, Modern Management	DMAX
Deputy Director	SXTM
Deputy Director, Overseas Operations	TCS
Web Production Manager	SXEO
Web Coordinator/Internet Content Manager	PEP
Associate Deputy Minister	FAC
Senior Project Officer	IBOC
Human Resources Management System and Compensation Services	SMD
Deputy Director, Foreign Policy and Corporate Communications Division	BCF
Deputy Director, Office of Innovation and Excellence	DMAX
Director, Outreach Programs and e-Communications Division	BCP
Deputy Director, Human Resources Management System and Compensation Services	SMSH
Deputy Director, Corporate Security Division	ISC
Regional eServices Manager, Export Development Division	TCE
Executive Assistant, Headquarters Administration Bureau	SPD
Program Officer, Peacebuilding and Human Security Division	AGP
Policy Advisor, Canada-US Advocacy and Mission Liaison Division	NUR
Systems Administrator, Application Operations Division	SXEO
Director General, Communications Bureau	BCD
Director of Communication Services	BCD
Manager, Application Development and Maintenance	SRBI

[2]Due to provisions of the Privacy Act the names of participants will be removed from the final report.

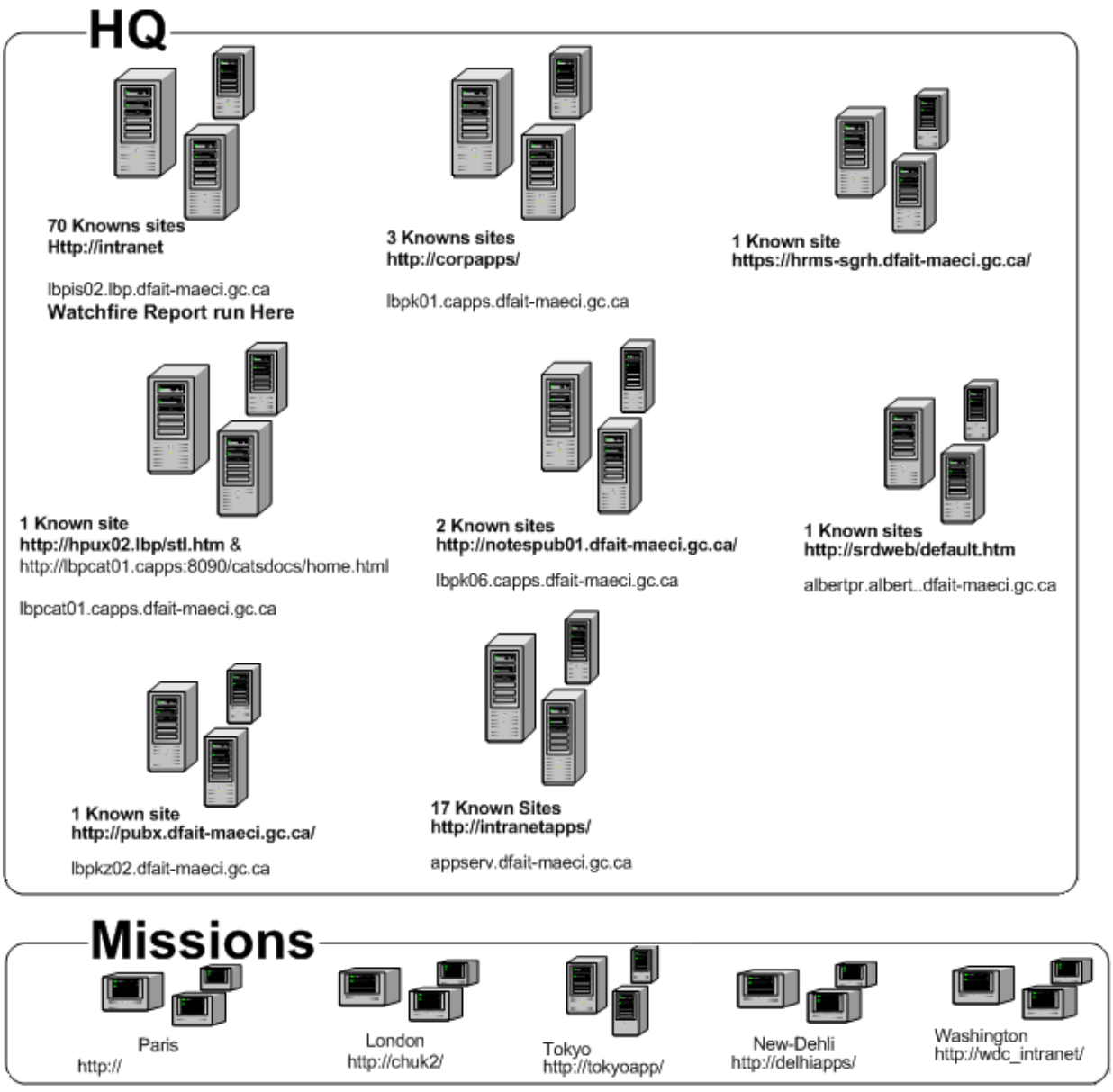
APPENDIX B - Servers and Sites Covered

			SITES						
Server	**URL**	**Primary Role**	**Splas**	**Panorama**	**Colour**	**Title**	**Different**	**Not Found**	**Total**
lpbis02	http://intranet	Panorama PLUS Others		42	3	4	16	5	70
lbpk01	http://corpapps	EQAMS, PubReg, Directory			1		2		3
	http://hrms-sgrh.dfait-maeci.gc.ca	PeopleSoft					1		1
lbpcat01	http://lbpcat01.capps	CATS, Tech Library					1		1
lbpk06	http://notespub01.dfait-maeci.gc.ca	Competitions, Acq Pol DB					2		2
albertpr	http://srdweb	Property, Materiel, Mail				1			1
lbpkz02 (on Internet)	http://pubx.dfait-maeci.gc.ca	Pubs Catalog			1				1
lpbis04	http://intranetapps	Various Applications	3	0	2		10	2	17
TOTAL									**96**

Illustration of Intranet Servers:

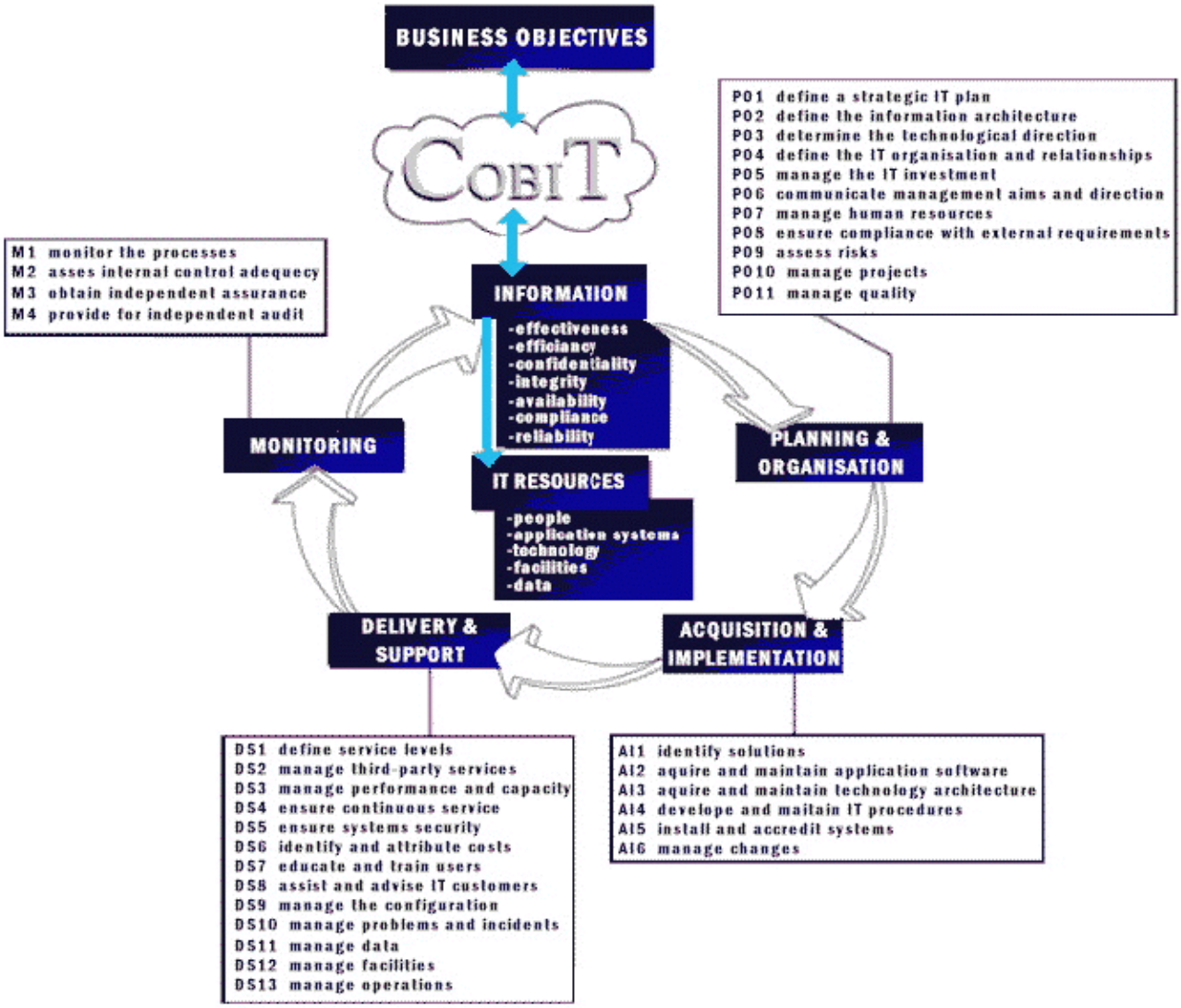
Intranet Intrastructure - The Servers

Note: Some of those servers could be the same machine



APPENDIX C - Control Objectives for Information and Related Technology (COBIT)

Control Objectives for Information and related Technology (COBIT) were developed as a generally applicable and accepted standard to ensure that IT has an effective Management Control Framework and is able to meet client and management expectations. COBIT includes existing international technical, professional, regulatory and industry-specific standards and is now recognized by TBS as an applicable framework for the review and audit of information systems in the Government of Canada.



COBIT is designed to be used by three distinct audiences:

- ***Management:*** to help them balance risk and control investment in an often unpredictable information technology environment. Management needs generally accepted IT governance and control practices to benchmark their existing and planned IT environment. COBIT is a tool that allows managers to communicate competing requirements and bridge the gap between control requirements, technical issues and business risks.

- ***Users (i.e. Business Process Owners):*** to obtain assurance on the security and controls of information technology services provided by internal or third parties.

- ***Information systems auditors*****:** to substantiate their opinions to management on internal controls.

The COBIT methodology indicates that there are a number of different processes consisting of many controls, and there is a systematic way to assess those controls.

COBIT consists of a framework for control in IT based on business information criteria and documented by control objectives organized by IT domains, processes and activities. Each of these areas has in addition to a set of control objectives, a definition and a rationale for control.

Business orientation is the main theme of COBIT. It is designed not only to be employed by users and auditors, but also, and more importantly, as a comprehensive checklist for business process owners. Business practice involves the full empowerment of business process owners so they have total responsibility for all aspects of the business process. This includes providing adequate controls. COBIT provides a tool for the business process owner that facilitates the discharge of this responsibility.

The COBIT framework starts from a simple premise: *In order to provide the information that the organisation needs to achieve its objectives, IT resources need to be managed by a set of naturally grouped processes*. The domains are identified using wording that management would use in the day-to-day activities of the organisation.

- ***Planning and Organizing*** - This domain covers the strategy and tactics related to the identification of the way information technology can best contribute to the achievement of the business objectives.
- ***Acquisition and Implementation*** - To realise the IT strategy, IT solutions need to be identified, developed or acquired as well as implemented and integrated into the business process.
- ***Delivery and Support*** - This domain is concerned with the actual delivery of required services, ranging from traditional operations over security and continuity aspects to training. In order to deliver services the necessary support processes must to be set up.
- ***Monitor the Process*** - All IT processes need to be regularly assessed over time for their quality and compliance with control requirements.

For further information on COBIT see http://www.isaca.org.

Audit Areas:				
Governance and overall management framework	*Satisfaction of user and business requirements*	*Ongoing costs of ownership*	*Accuracy and currency of content*	*Availability and integrity of systems*
COBIT Explanation:				
IT Governance refers to a structure of relationships and processes to direct and control the enterprise in order to achieve the enterprise's goals by adding value while balancing risk versus return over IT and its processes.	User satisfaction is measured by: ▪ Effectiveness ▪ Efficiency ▪ Confidentiality ▪ Integrity ▪ Availability ▪ Compliance ▪ Reliability of information. Business requirements refers to the degree of compliance to stated or implied parameters and specifications.	Determination of how costs of ownership are monitored, and the process for comparison of actuals to budgets.	Information is correct and up to date.	Information is usable on demand to support business functions, and the information is accurate and complete.

APPENDIX D - Summary of Management Recommendations

The Intranet uses Internet (World Wide Web) type tools, but is set up on the internal SIGNET network, currently as a “common service” to International Trade Canada and Foreign Affairs Canada.

This appendix provides a summary of recommendations presented to Foreign Affairs Canada on observations related to the technical infrastructure (SIGNET) under the auspices of SXD; including management of the web servers, support services, “search engines” and diagnostic tools. No response from ITCan is required to the following recommendations.

2.0 Efficiency and Effectiveness of the Intranet

2.1 The Effectiveness of Intranet Content

User efficiency and effectiveness is diminished due to the existence of ITCan/FAC Intranet Web sites that contain unwanted content, lack feedback channels and have unfamiliar Web site layouts. Overall, ITCan/FAC Intranet content is very inefficient to access, resulting in many user complaints and examples of frustration.

Recommended that:

2.1.1 CSM, through the Intranet Editorial Board, establish clear operational standards for Intranet site content.

2.1.2 That CSM, through the Intranet Editorial Board, initiate remediation of existing Intranet sites to new standards. The Editorial Board should acknowledge content owner time and budget constraints when implementing new policies and standards. A phased approach is recommended.

2.2 The Structure and Usability of the Panorama Web Site

The current form of the main Intranet homepage – the Panorama Web site is widely considered to be unstructured, difficult to navigate, unfriendly to users, and largely a duplication of content with broadcast emails. This makes it inefficient and ineffective as a tool for accessing FAC information.

Recommended that:

2.2.1 DMA define CSM as the owner of the main Intranet homepage.

2.2.2 CSM, through the Intranet Steering Committee, identify owners for all other Intranet Web sites.

2.2.3 CSM, through the Intranet Steering Committee initiate a review of (and overhaul as necessary) all Intranet Web sites to ensure consistency with the new standards.

2.3 Effectiveness of the Search Engines

The configuration of Search Engines on the Intranet is ineffective. The Intranet currently has several separate, non-integrated engines that are implemented in an inconsistent manner. The result to the user is slow operation, incorrect results, and overall frustration. This, in turn, leads

users to seek their information through less efficient means, such as manual searches, paper searches, or personal contact. This creates the risk that inaccurate search results may lead to decisions based on incomplete or inconsistent information.

Recommended that:

2.3.1 CSM, through the Intranet Steering Committee, assign responsibility for the common Intranet search engine(s) to SXE.

2.3.2 SXE define, plan, and implement improvements to search engines.

2.3.3 CSM, through the Intranet Editorial Board, ensure that new Intranet Web sites conform to requirements to support searches.

2.3.4 CSM, through the Intranet Editorial Board, initiate documentation and maintenance of the architecture for Intranet content.

2.4 Intranet Application Development Technologies and Environments

There is an opportunity to reduce the costs of development, maintenance, and support of Intranet applications by harmonizing application development technologies, platforms, and environments. For example, Microsoft Java and Sun Java, very similar technologies, are both currently supported.

Recommended that:

2.4.1 SXD review and rationalize the platforms and environments for Intranet development and operation.

2.4.2 SXD document and communicate the standards for externally-developed Intranet applications and Web sites.

2.5 Availability of Intranet to Missions

Users at some missions have inadequate access to some Intranet content due to limited effective capacity.

Effective capacity is a function of the **network link speed**, the **applications being used**, **user patterns** and the **proper tuning** of applications and network. Capacity constraints have made access to the Intranet and its applications very inefficient for some missions.

Recommended that:

2.5.1 CSM, through the Intranet Steering Committee, establish minimum standards of performance for all new Intranet applications and Web sites (e.g., minimum response times).

2.5.2 SXD review existing Intranet applications and Web sites to find means of reducing transfers of large files and forms (caching, reducing file size, etc.).

2.6 Intranet Security

The lack of controls on material being published on the Intranet has management concerned that sensitive information available on the Intranet individually or collectively compromises security.

Recommended that:

2.6.1 CSM, in consultation with IST, identify and assess the adequacy of existing security policies and procedures related to Intranet content.

2.6.2 ZIV conduct a follow-up security audit of Intranet content in six months to identify outstanding security risks.

2.6.3 CSM, in consultation with IST, educate Intranet publishers on the security policies, procedures and quality control measures.

3.0 Meeting Standards for Availability and Integrity

3.1 Dead Links, Orphan Pages, Stale Pages

The integrity of the content of some of the reviewed Web sites is low, which exacerbates the efficiency and effectiveness problems noted elsewhere in this report.

Recommended that:

3.1.1 SXE review all pages on the principle Intranet servers and remove all dead links and orphan pages.

3.1.2 CSM initiate a review by Web site owners of all content for currency and accuracy.

3.1.3 SXE, in consultation with content owners, periodically scan all sites in order to identify and remove dead links, orphans, and stale content.

APPENDIX E - Glossary

Accessibility Check
An accessibility check is a test that is performed to determine the compliance of a web page against a checkpoint. Each checkpoint may comprise more than one check to test for compliance.

Application
An application that is part of the content of a Web site that is dynamically produced by a server-side application technology (which is not to be confused with an application server). From a security perspective, each page that is dynamically generated is an application. Note that applications may also be nested. For instance, the collection of ASP pages that make up WebXM can be considered to be the application 'WebXM'.

Application Server
A server that awaits various types of requests (depending on the type of application server) and provides the business logic to process those requests.

Authentication Point
A content asset that either contains an authenticator (in the case of form-based authentication) or that was accessed by means of an authenticator.

Authenticator
In the case of form-based authentication, the authenticator is the application that validates a user's credentials. HTTP, NTLM, and certificate-based validation all use authenticators that are inherent to the web server.

Availability
Availability relates to information being available when required by the business process now and in the future. It also concerns the safeguarding of necessary resources and associated capabilities.

Boolean Expression
Boolean expressions are often encountered when doing searches on the web. In Boolean searching, you can use an AND operator between two words to find documents that contain both the words, or you can use an OR operator to find documents that contain either one of the words.

Broken Links Error Types
A Broken Links report includes the following error types:

- File Not Found: Occurs when a URL points to a file on the server that does not exist, and is usually caused by misspelling of the URL or when the target file has been deleted or renamed.
- Cannot Connect: Occurs when the target server does not respond to the request from the browser, and is often due to a server that is down or too busy.
- Host Not Found: Occurs when a URL points to a server that does not exist.

- Time-out: Occurs when an existing server responds but does not return the data fast enough and the browser times out.
- Other: Occur when there is unauthorized access or when someone is unable to open the file. If the error does not fit within one of the existing error types, it is included in the Other error type.

Certificate
A certificate is an electronic 'credit card' that establishes your credentials when doing business or other transactions on the Web. It is a public key that is signed (using a digital signature) by a certificate authority (CA). Certificates also include some other ancillary attributes, such as the name, serial number, and expiration dates.

Certificate Authority
A CA is an authority in a network that issues and manages cryptographic credentials and public keys for message encryption. It is a part of a public key infrastructure (PKI).

Context
Many reports display contextual information about an issue found during a scan. Context is the information about an issue that is captured during the scan. For example, in the HTML anchor <A HREF = "brokenlink.htm">Broken Link</A>, the context is the text between the <A> and </A> tags. Other link contexts include JavaScript, Flash, Image Map, Image, Style Sheet, and Real Media.

Dashboard
A dashboard is a set of properties that defines how My Watchfire and My Watchfire Classic looks and behaves. In the case of My Watchfire, properties include which issues are presented, how issues are grouped and named, how scores are presented visually, and how its reports behave. In the case of My Watchfire Classic, properties include which issues are presented and how scores are calculated.

Digital Signature
A digital signature is a signature derived from the content of a message that can be used to prove the integrity and origin of that message.

Document
A file that contains content relevant to the goals of a Web site.

Domain
A domain is the part of the Uniform Resource Locator (URL) that locates an organization or entity on the Internet; for example, www.watchfire.com.

Domain Name
A name that identifies one or more IP addresses and consists of at least a top-level portion, such as .com, .gov, .edu, or .net, and a second-level portion, such as Watchfire or MicroSoft. A third, fourth, or more level portions may need to be added to it (for example, support.company.com).

Domain Name Service
A domain name service (DNS) resolves domain names to their associated IP address.

Effectiveness
Effectiveness deals with information being relevant and pertinent to the business process as well as being delivered in a timely, correct, consistent and usable manner.

Efficiency
Efficiency concerns the provision of information through the optimal (most productive and economical) use of resources.

Encryption Method
The process by which data is encrypted and decrypted. For example, data encryption security (DES) is an encryption method.

External Domain
External domains are those domains that have a different URL (up to the first backslash) from the URL of the site being scanned. If www.watchfire.com is scanned, domains such as www.products.watchfire.com will be considered external domains in the reports. This also applies to third-party reports in that URLs that are considered third-party are those that are external to the scan.

File
Anything stored on a disk that is understood as a file by the operating system of the computer housing the disk.

Host
A computer on a network. Each host can be located based on its IP address, or by a fully qualified domain name. If the host is referred to by its host name, that name must first be resolved to an IP address by a Domain Name Service before the host can actually be located.

Host Name
The name of a host with respect to its Intranet. Relative to an extranet, a host is named using a fully qualified domain name.

Image Description
A description of the content of an image, used by people who cannot view or process the image fully. If the image is also described in text accompanying the image, or is a simple icon adequately represented by the ALT text, a separate description may not be necessary.

Integrity
Integrity relates to the accuracy and completeness of information as well as to its validity in accordance with business values and expectations.

Internet Protocol Address
An Internet Protocol (IP) address is a numeric identifier for a host, for example, 293.26.1.19.

Internal Domain
A domain that is included in the content scan and that appears in the Starting URLs list.

Key
In cryptography, a key is a constant value that is applied using an algorithm to a string or block of unencrypted data to produce encrypted data, or to decrypt encrypted data. Although there are billions of keys in existence, a piece of data that was encrypted with one key can only be decrypted using that same key (or a related key).

Key Exchange Protocol
A protocol governing how two parties exchange keys to use in securing a transaction. Once keys have been exchanged, data can be encrypted at the sender's end (using an agreed-upon encryption method) and decrypted at the receiver's end.

Key Length
Key length is a measure of the size of the data that makes up a key, and hence determines how robust the key is. Longer keys, such as 128 bit, are generally considered to be harder to crack than shorter keys (48 bit).

Link
An HTML element that allows a user agent to navigate from their current location to some URL. Links are URLs that can be clicked.

Method, Web Server
A way that a web server can manipulate information. Some methods are dangerous because they allow remote users to affect data on the web server.

Navigation Trail or 'You Are Here'
The navigation trail, also known as 'You are here', shows the path through the WebXM Control Center from where you started to where you are now. If there is not enough space to display the entire path, ellipses appear at the beginning of the path.

Page
A page is a web document that can be experienced by a user. A page can include file types such as HTML, Active Server Pages, Java Server Pages, Microsoft Office, Adobe Acrobat (.pdf), Real Networks Streaming Media, Windows Media Player , XML , Macromedia Flash, or Javascript.

Port
A numerical location on a host on which a server awaits requests. For instance, a host may receive requests on ports 80 and 443. Since the web server on that host awaits requests, or 'listens' on port 80, and the application server on that host listens on port 443, requests made to those ports will go to their respective servers. Requests made to ports on which no server is listening will not be honoured.

Private Key
A private key is an encryption key known only by a select group of clients. Private keys can be used in conjunction with a related public key (in which case the public and private keys are asymmetric) or by themselves (in which case they are symmetric) to effectively encrypt messages and digital signatures.

Public Key
A public key is the part of a public-private key pair that is made available to anyone to validate data encrypted with the private key. Because public keys are always part of a key pair, they are by nature asymmetric.

Public Key Infrastructure
A public key infrastructure (PKI) enables users of a basically unsecure public network such as the Internet to securely and privately exchange data and money through the use of a public and a private cryptographic key pair that is obtained and shared through a trusted authority.

Publish a Survey
When a Feedback survey is published to a Web site, HTML and .jsp pages are generated and saved to the Feedback Server. In addition, the survey's status is changed to active, meaning that it is available to Web site users.

Reliability
Reliability of information relates to the provision of appropriate information for management to operate the entity and for management to exercise its financial and compliance reporting responsibilities.

Secure Sockets Layer
The Secure Sockets Layer (SSL) is a commonly-used protocol for managing the security of a message transmission on the Internet, that has been succeeded by Transport Layer Security (TLS). SSL uses a program layer located between the Internet's Hypertext Transfer Protocol (HTTP) and Transport Control Protocol (TCP) layers. SSL is included as part of both the Microsoft and Netscape browsers and most Web server products. Developed by Netscape, SSL also gained the support of Microsoft and other Internet client/server developers as well and became the de facto standard until evolving into Transport Layer Security. The 'sockets' part of the term refers to the sockets method of passing data back and forth between a client and a server program in a network or between program layers in the same computer. SSL uses the public-and-private key encryption system from RSA, which also includes the use of a digital certificate.

Secure Sockets Layer Server
A server that handles SSL HTTP requests.

Server
A program that resides on a host and waits for and fulfils requests from other hosts. Servers receive requests through one or more ports on a host.

Server-Side Application Technology
A technology that is enabled for a web server, such as Active Server Pages (ASP), Java Server Pages (JSP) or PHP. Server-side application technologies produce dynamic web content, which is considered to be an application.

Style Sheet
A set of formatting or style commands that are kept separate from the actual content of a web page. This makes formatting easier as it can be defined globally, rather than each time a particular element occurs.

Symmetric Key
The type of key used in a form of encryption where the same key used to encrypt data is needed to decrypt it.

Transport Layer Protocol
Transport Layer Security (TLS) is a protocol that ensures privacy between communicating applications and their users on the Internet and is the successor to the Secure Sockets Layer (SSL). When a server and client communicate, TLS ensures that no third party may eavesdrop or tamper with any message.

URL
A URL, or Unique Resource Locator, is a way of indicating the location of an item in cyberspace.

User Type
A user type, and there are four of them, describes a particular user's abilities within the WebXM Control Center. However, their capabilities can further be extended by the role or roles they assume under webspaces. The four user types are: Standard User, System Administrator, No Access, and Webspace Creator.

Web Server
A server that awaits Hypertext Transfer Protocol (HTTP) requests, and serves up HTTP in response.

Web Site Technology
Technology assets, such as a content management system, that are used to build and manage the content assets of a Web site.