

## V. TRANSPORT CANADA

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### 1. OVERVIEW

#### a. Background

Transport Canada's mission is to develop and administer policies, regulations and services for a modern, efficient, reliable, safe and affordable transportation system essential to strengthening Canada's growth and prosperity. The department consists of groups working at headquarters in Ottawa and in five regions, as well as Transport Canada Service Centres.

Within the Government of Canada, Minister Chuck Strahl leads the Transport, Infrastructure and Communities (TIC) Portfolio. The Minister's portfolio includes Transport Canada, Infrastructure Canada, the Canadian Transportation Agency, the Transportation Appeal Tribunal of Canada and 15 Crown corporations.

The portfolio is a point of convergence for some of the most important issues facing Canada today: the productivity of the economy; transportation safety and security; environmental sustainability; and the quality of life in cities and communities, as supported by public infrastructure. The portfolio also brings together a range of tools, including programs, legislation, policy frameworks and stakeholder networks.

- TC Vision

A transportation system in Canada that is recognized worldwide as safe and secure, efficient and environmentally responsible.

- TC Mission

To serve the public interest through the promotion of a safe and secure, efficient and environmentally responsible transportation system in Canada.

#### b. Organization

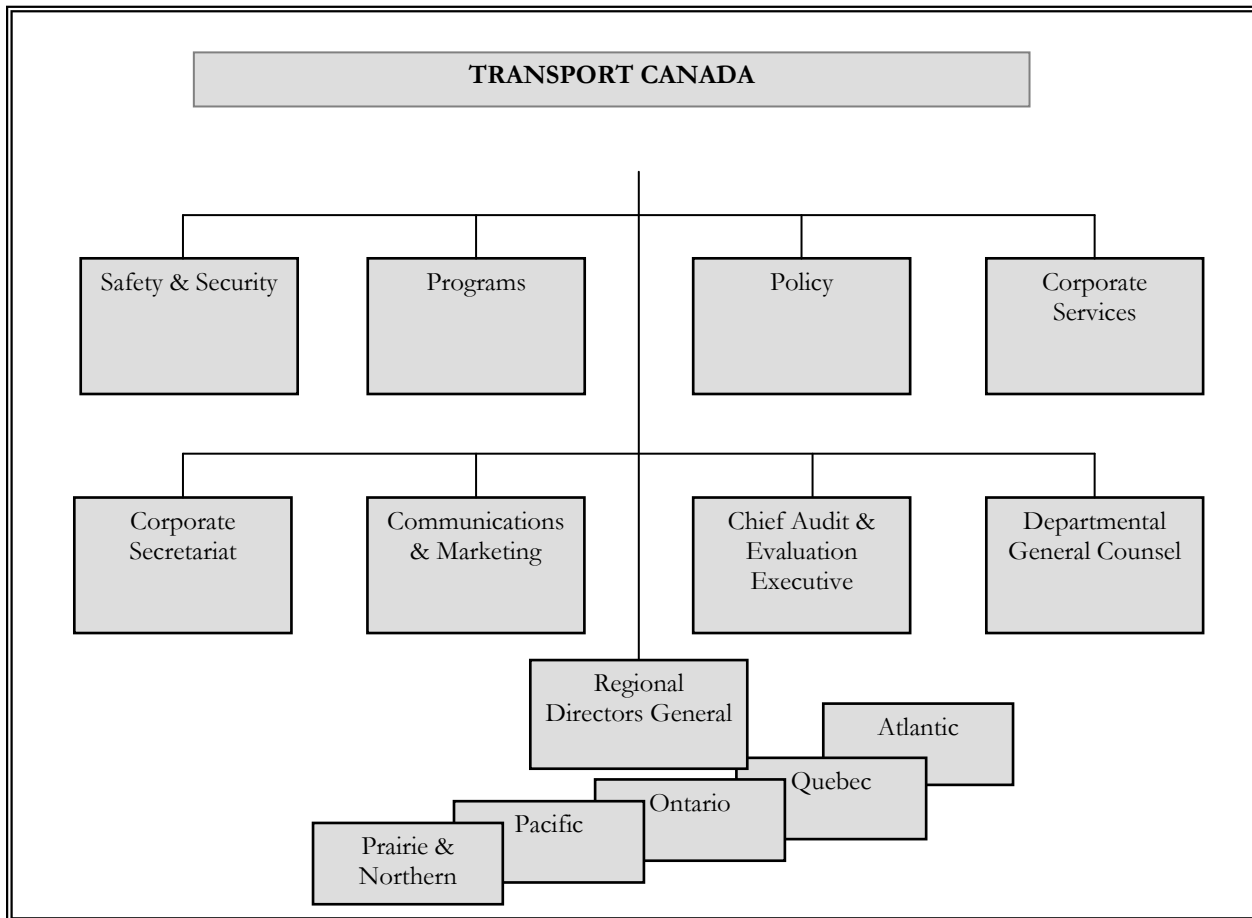
Transport Canada is organized as shown in Exhibit V-1.

- Policy Group

The Policy Group's role is to develop, recommend and coordinate modal and multi-modal policies. They also provide advice, analysis and intelligence on transportation issues, system performance and stakeholder positions. Advice on policy options is based on efficiency, competitiveness, safety and security, environmental sustainability, and intermodal integration. This role is fulfilled through a multi-modal program of policy analysis, briefings, coordination,

consultations, evaluation and economic analysis, which develops and utilizes necessary data, forecasts, models, research and intelligence.

## EXHIBIT V-1



- **Safety and Security Group**

The Safety and Security Group is responsible for the development of regulations and national standards, as well as for the implementation of monitoring, testing, inspections and subsidy programs, which contribute to safety and security in the aviation, marine, rail and road modes of transport. The Group administers the delivery of aircraft services to government and other transportation bodies. The Group develops and enforces regulations, and standards under federal jurisdiction to protect public safety in the transportation of dangerous goods and to prevent unlawful interference in the aviation, marine and railway modes of transport. The Group also ensures that the Department is prepared to respond to transportation and transportation-related emergencies.

- **Programs Group**

The Programs Group has responsibility for a vital economic portfolio. Given the Canadian economy's dependence on trade and the fact that trade, in turn, is highly

dependent on efficient transportation, the programs they deliver are of utmost importance. They support the priorities of government and contribute to the Minister's policy objectives.

While in the past the Programs Group concentrated on the divestiture of airport, port and surface transportation facilities, they now have a stronger focus on their custodial and stewardship role while divestiture continues. They are in touch with a broad base of stakeholders and play a key role in the implementation of sustainable transportation infrastructure projects. Their environmental programs seek to create awareness and educate Canadians about sustainable transportation. The group's contribution programs are complex and managed through a risk-based approach, with effective monitoring and ongoing review.

- Communications and Marketing Group

The role of the Communications and Marketing Group is to help ensure effective and comprehensive communications between the department's internal and external clients. The Group exercises an oversight role in all communications areas.

Group and Regional Heads are responsible for the integration of communications planning and implementation into policy development and delivery, and for the allocation of resources to fulfil this need. The Communications and Marketing Group provides services and advice to its departmental clients and ensures that high standards are maintained for communications activities.

- Corporate Services Group

The Corporate Services Group provides overall administration, finance, human resources, executive services and IM/IT support to the department. IM/IT products and services are delivered under a shared accountability model and within a corporately understood framework. Centralized activities are corporate in nature, while decentralized activities are those that are driven by regional requirements.

- Regions

Regional offices are responsible for carrying out the regional activities of Transport Canada. Regional heads report directly to the Deputy Minister. Regional offices are located in Vancouver, Winnipeg and Edmonton, Toronto, Montreal and Moncton.

**c. Key Contacts**

Technology and Information Management Services  
Director General and CIO – Chris Molinski, 613-998-6465

Computer Operations and Network Services  
Director – Rick Huard, 613-990-5380

Information Management Services  
Director – Diane Lavigne, 613-991-2867

IM/IT Architecture and Planning  
Director – Joël Comeau, 613-993-8040

Application Management Services  
A/Director – Nora Balogh, 613- 993-4622

IM/IT Security and Infrastructure Planning  
Director – Richard Ruta, 613-993-7066

**d. Resources Available**

- Approximately \$55 million department-wide for IM/IT related activities (capital and OOC included, Salary and Wages excluded).
- Staffing – IM/IT Full Time Equivalent (National Capital Region (NCR)+ 5 Regions) 225.

**e. Technology Overview**

- There are approximately 5,500 PCs installed, mostly LAN-attached. The Microsoft suite of products is the departmental standard including Windows XP Professional SP3 and Windows Server 2003 SP2, MS Office 2000 SP3, Outlook 2003 SP3, MS Exchange 2007 (Internal, X.400 and Internet Mail). Microsoft Internet Explorer (IE) is the supported web browser and Internet Information Services (IIS) is the standard web application server platform. New application development will leverage this environment. Migration to MS Office 2007 is scheduled to begin in October 2010.
- The Records Documents and Information Management System (RDIMS) is part of the departmental desktop standard.
- Of the approximately 5,500 Transport Canada intranet (TCI) clients, half are located in the NCR while the remainder makes up the other 5 regions. Windows computers are logically interconnected under a Windows 2003 SP2 functional level single forest/single domain model.

- Mid-range platforms include HP Proliant, IBM xSeries and Dell PowerEdge running Windows 2003/2008 and Redhat Enterprise Linux, PA-RISC and Itanium servers running HP/UX and VMware ESX running on HP Proliant servers. The VMware ESX servers run Redhat Enterprise Linux and Windows 2003, XP, 2000, 2008 in Virtual Machines (VMs). High Availability is provided by clustering technologies on these platforms.
- Citrix Presentation Server is the basis of the departmental thin client architecture and is implemented to facilitate access to, and delivery of, specific TC Enterprise business applications.
- Servers are co-located in centralized server rooms, specially designed to provide fault tolerance capability and provide upwards of 99% availability.
- The Transport Canada Intranet (TCI) is the departmental TCP/IP-based WAN to interconnect LANs, and servers. The TCI provides service to 93 dedicated sites and provides external access through Citrix Access Gateway (known at TC as MyDesk / MonBureau) as well as a PKI-based Secure Remote Access (SRA) service and firewall service.

## 2. TODAY'S PLATFORM AND APPLICATIONS

- Client/Server Environment

Transport Canada's desktop software installations are accomplished using the Windows Active Directory Group Policy Object software installation feature and the Distributed File System (DFS) component of Windows server 2003. There are currently 88 DFS shares across the Transport Canada network.

- Windows XP SP3 Professional is the standard desktop operating system.
  - Windows Server 2003 SP2 is the standard for LAN workgroup, application, mail post office, web services and network communication, though planning is under way for Windows server 2008.
  - Server environments include HP PA-RISC and Itanium servers running HP/UX; HP Proliant running Redhat Enterprise Linux, Windows Server 2008, 2003 SP2, and VMWare ESX virtual server environment hosting corporate data resources and other data services.
  - TCP/IP is the WAN protocol.
  - The LAN technology is Ethernet.
  - An Automated Storage Management solution provides Transport Canada with an enterprise storage management system. This solution is based on HP, Hitachi, IBM/Diligent, Brocade, and CommVault Simpana technologies and services to provide automated backups, high availability disk arrays and virtual and physical tape libraries.
  - TC uses Citrix Presentation Server 4.0 to deliver national corporate applications. In remote locations where bandwidth is not available, Citrix is also used to deliver the full office automation applications and to provide desktop-like functionality for TC's teleworkers using MyDesk. (Citrix Access Gateway software)
  - Transport Canada's automated Systems Management tool, HP Service Manager 7, is an ITIL-based system used nationally to manage all Change requests and Problem Management incidents. This system has been in use at Transport Canada for approximately one year.
- Exhibit V-2 shows the PC software environment.
    - \* The future software environment will be determined based on business requirements and strategic business and IM/IT directions.

## EXHIBIT V-2

<b>DESKTOP SOFTWARE ENVIRONMENT</b>		
<b>Application</b>	<b>Today</b>	<b>Future*</b>
<b>Antivirus</b>	McAfee VirusScan 8.5 McAfee Desktop Firewall 8.5	McAfee VirusScan 8.7 with Anti-Spyware Module McAfee Host Intrusion Prevention 7
<b>Word Processing</b>	RDIMS DM / MS Word 2000 integration	RDIMS DM / MS Word 2007 integration
<b>Spreadsheet</b>	RDIMS DM / MS Excel 2000 integration	RDIMS DM / MS Excel 2007 integration
<b>Presentation Graphics</b>	RDIMS DM / MS PowerPoint 2000 integration	RDIMS DM / MS PowerPoint 2007 integration
<b>Database</b>	Oracle 9i, 10g MS SQL Server 2005/2008 MS Access 2000	Oracle 11g MS SQL Server 2008 R2 MS Access 2007
<b>Messaging</b>	RDIMS DM / MS Outlook 2003 integration (Desktop) MS Exchange 2007 (Server)	RDIMS DM / MS Outlook 2007 (Desktop) MS Exchange 2007 (Server)
<b>Desktop Operating System</b>	MS Windows XP SP3	MS Windows 7
<b>Browser</b>	MS Internet Explorer 7	MS Internet Explorer 8 or 9
<b>Web Editing Tools</b>	Dreamweaver CS4 OpenText LiveLink Web Solutions WCMS (formerly known as RedDot)	Dreamweaver CS5 OpenText LiveLink Web Solutions WCMS (formerly known as RedDot)
<b>Security</b>	Entrust PKI and SSL Nortel Contivity	Entrust PKI, SSL Nortel Contivity
<b>Document Management</b>	RDIMS DM CcmMercury Evault	RDIMS DM CcmMercury Evault
<b>Record Management</b>	Livelihood (RDIMS)	Livelihood (RDIMS)
<b>Other</b>	Adobe Reader 8.2 WinZip 9.0 QuickView Plus 10.0 Citrix Program Neighbourhood Agent 10.2 .NET Framework 3.5 SP1 Java 6 Update 17	Adobe Reader 9.x WinZip 11.1 QuickView Plus 10.0 Citrix Xen (version 5.0) .NET Framework 4 Java 6 Update x

## **b. Web Environment**

Transport Canada uses Network Load Balanced web farms with Microsoft Internet Information Services (IIS) servers for both the Internet and Intranet web sites and also for the secure environments. The web clustering solution and its associated server platform are scheduled to be updated by the end of 2010. After the update, the software on these servers will be:

- Windows Server 2008 R2 64 bits
- Internet Information Services 7.5
- Oracle Client 11g R2 drivers
- IE 8.0, MDAC 6.1
- XML 4.2
- MSXML 6.2
- Crystal Reports 10.2 run time (Visual studio 2005)
- Crystal Reports 10.5 run time (Visual Studio 2008)
- NET Framework 1.1 SP1, 2.0 SP2, 3.0 SP2 and 3.5 SP1
- TCMailer.Net 2.0 (a custom .NET component that provides mailing capability, logging and error handling)
- CLFPage (1.0, 2.0, 2.2, 3.0
- 4.0, External 1.0) (a custom .NET component that provide the CLF shell for all web applications).

## **c. Application Development Environment**

- Web/Internet/Intranet - MS Visual Studio 2005 and 2008, Java, Dreamweaver CS4, XHTML, XML, Oracle Forms and Web Services are used.
- Client/Server - MS Visual Studio.2005 and 2008, Java, MS Access, PowerBuilder and Centura are used. PowerBuilder and Centura are considered legacy platforms, and use of MS Access is no longer supported in the Web environment. Work is under way to transition to a service oriented application architecture (SOA) approach focused on n-tier and smart client designs.
- Database applications requiring out of the box integration with RDIMS and/or need workflow tracking capabilities are developed using the ccmMercury tool.
- Forms Management - Transport Canada has standardized on Adobe LiveCycle

Designer for the creation and editing of corporate forms. Publishing is facilitated through the Forms Management System (FMS); an internally developed database application. Client access to all published PDF and paper forms is available through the TC Internal and External Forms Catalogues. The default forms and PDF document viewer is Adobe Reader, which continues to be part of Transport Canada's baseline corporate desktop. The Forms Catalogue Web application (where all electronic and paper forms are stored and accessed) has been modified to use Adobe Acrobat. Fytek's PDF ReportWriter COM+ tool is used to generate database driven PDF reports.

- Transport Canada has evaluated, acquired and implemented (March 31 2008) Adobe Acrobat Lifecycle Designer Version 8 as the new standard Forms designer package. The Forms reader and updater is Adobe Acrobat.
- Transport Canada uses the AllFusion Modelling Suite as the Metadata Repository within the department. The suite consists of Model Manager, Erwin Data Modeller, Component Modeller, Process Modeller and Validator. This Data Modelling framework consists of models based on international standards, a common business approach and Transport Canada's business line data subject area categories. The aim is the creation of a department wide set of models that is built on data / information sharing, standardization, reusability and data integrity. Please note that Component Modeller and Process Modeller have not yet been fully endorsed by the department as a standard.
- The ORACLE Database Management System is the standard Database Management System for National, Corporate and Internet / Extranet applications. Where applicable MS SQL Server may be introduced to address particular needs.
- Transport Canada has acquired and implemented the following SAP Business Objects products: Business Objects XI Enterprise (for adhoc and multidimensional reporting); Business Objects Crystal Enterprise (for reporting); Business Objects Xcelcius (for DashBoards) and Business Objects Premium.
- Compuware's DevPartner Studio Professional suite is used for software debugging and tuning. Recent additions to the developers' toolbox are DevPartner's Fault Simulator and Security Checker.
- Fujitsu's (formally DMR) web based Macroscopic ProductivityCentre® is used as the Corporate SDLC methodology tool. Macroscopic ManagementSuite® is being assessed for consideration as the corporate Project Management methodology tool.
- TC also makes use of PWGSC's Secure Channel services for its externally facing Protected 'B' Web applications for authentication. The new Secure Channel Access Key solution will replace Secure Channel e-Pass before December 31st 2010. TC also makes use of Secure Channel's secure FTP service known as Secure file Transfer (SFT).

- TC's solution for its internally facing Protected 'B' web applications is based on the Entrust Truepass and Entrust SDK.
- Transport Canada Intranet
  - A TCP/IP-based department-wide network, Transport Canada Intranet (TCI) network, has been established interconnecting all TC offices. It is a router-based network supporting 10/100/1000 Base-T (Ethernet) LAN connectivity.
  - Work was completed in 2008 to establish wireless capability within the NCR Tower C premises and to provide this capability to regional offices.
  - LAN servers are interconnected within the TCI, providing secure access to key corporate services.
  - Perimeter defences provide secure external access and gateways to external services (e.g. the government X.400 Network and Global Internet). It includes firewall, Intrusion Detection and host agents for anti-virus.
  - Multi-Protocol Label Switching (MPLS) is currently employed as the WAN backbone and has the potential to support Asynchronous Transfer Mode (ATM) for high-speed voice, data, and video, etc. requirements. Government Fibre Network Services has been implemented in Metropolitan areas where TC offices exist. MPLS is part of production network services.
  - The TCI is a service delivered by PWGSC/ITSB.
  - The TCI supports access to the GC X.500 Directory and Secure Remote Access capabilities for the mobile/teleworker.
  - PKI Entrust software has been installed on every TC desktop. This allows secure exchange of electronic information created using TC's national messaging system, MS Exchange, internally and between any government or private entity that participates in the PKI model. A secure Web infrastructure service, based on the Entrust technology, is being implemented for applications requiring such security. TC has been utilizing PWGSC's Secure Channel services for processing of Protected "B" web applications on the Internet. These services are being migrated to PWGSC's Access Key Services during the 2010/11 fiscal year.
  - A national Secure Remote Access service has been implemented to support an increasingly mobile workforce. In addition to providing a standardized service for remote access to e-mail and LAN services by work-at-home users during non-business hours, there is a critical need to support travelling inspectors during core business hours. Other remote connectivity requirements are met with tools such as Webmail and MyDesk.

- This service is available to all regional offices on a remote-dial phone number basis and provides secure access to that individual’s electronic work environment regardless of where they may be at any particular point in time.
  - This service will be provided by ITSB (PWGSC) and incorporates PKI capability for all Transport Canada remote users.
  - There are 24 sites connected via DSL/Cable using Secure Remote Access Next Generation Gate-to-Gate technology. Currently this service is available on a case-by-case basis.
- E-Services Delivery Environment
    - Transport Canada currently utilizes approximately 130 national applications to deliver its programs and meet its administrative requirements (these are included in the 490+ applications recorded in Transport Canada’s departmental application inventory). These applications run in a mixed environment of LAN based (client-server considered the legacy environment) and Intranet/Internet web (predominant platform for all new application development) environments. Thin-client technology (Citrix Metaframe) has been rolled out to facilitate access to Enterprise applications. Transport Canada is also a strong supporter of Commercial-Off-the-Shelf / shared solutions and of cluster-group arrangements, where the fit is right.
    - Transport Canada undertook a study in 2006/07, known as TC’s Application Review and Consolidation Study (TC-ARCS) to determine long-range application development and evolution plans (including a review of possible efficiencies). The Study proposed the need to move to a SOA in addition to proposing certain cost efficiencies in end-to-end planning and system management processes. Since then, a number of web services modules have been developed providing common master-data access services and a study was conducted on how to implement a UDDI library at TC.
    - Transport Canada has developed an Application Management Framework (AMF) to provide a policy, standards, guidelines and best practices for application development and support. The AMF is a blueprint for how business application systems are planned, developed, implemented, maintained and supported within Transport Canada. Its cornerstone is the Fujitsu Macroscopic methodology tool.
    - Transport Canada has an internal Web service (intranet) and an external Web service (Global Internet) for access by the public. The platform used for those environments are in the middle of a migration that should be completed before the end of FY 2011-12. The TC internal and external Web environment consists of the following predominant products: MS Windows Server 2003, MS IIS6 and Oracle Client 10g drivers (they will be replaced by Windows Server 2008 R2 64 bits, Internet Information Services 7.5 and Oracle Client 11g R2 drivers), Unifind Search Engine (from KCSL Inc.) for intranet, Google Search Appliance Search Engine for Internet, and Dreamweaver CS4. A phased implementation of

an Enterprise Web Site Content Management solution (OpenText's Web solutions, formerly known as RedDot) started in 2008/2009 and will be ongoing for the next two years. The Internet part is completed.

- Both the intranet and Internet sites are compliant with Government of Canada 'common look and feel' standards and guidelines (V1.1 for the Intranet and V2.0 for the Internet). The V2 'look and feel' is being applied to all new externally facing web sites and business applications. The TC Web sites provide a more intuitive interface for those requiring information about TC and its services. Clients and members of the general public are currently able to:
  - Receive general TC information including speeches and press releases;
  - Obtain names and phone numbers from the TC directory;
  - Read TC Acts, Regulations and policies;
  - Review and comment on revisions to regulations;
  - Query registration data for Canadian aircraft and vessels.
- Web application development and acceptance (DEV and ACC) servers have been implemented to provide more capacity to perform application/database code development and a significantly improved integration and user-testing environment. VMware is used extensively in this environment.
- The TC Directory empowers Transport Canada managers and employees to manage their own personal information and quickly acquire the Transport Canada services and assets directly through the Web environment. The TC Directory consolidates existing directories, automatically manages system and application accounts, Security Screening Functionality and helps promote and enforce safety and security for Transport Canada buildings and networks.
- Oracle Financials 11i (11.5.10) has been implemented to expand the capability of the departmental financial system to include e-payment (I-Payment) and e-receivables (I-Receivables), electronic ordering and inventory management (I-Store) of TC products sold to the public, and a web browser-based interface making the system far more effective and efficient to use. The Oracle Financials 11i footprint was expanded to include the I-Expense module and has been used to manage employee travel claims.
- The method for selecting and funding e-services candidates has been integrated into the ongoing departmental IM/IT investment planning activities
- Administrative Systems Environment
  - The Oracle 11i BIRM (Business Intelligence and Resource Management) system enables the department to integrate its financial and materiel resources. It is based on the Oracle Financials 11i (Oracle 11.5.10) suite of applications with

support for Citrix MetaFrame thin clients. The infrastructure for these systems was upgraded to utilize newer technology based on HP-UX for the database components and Intel based servers running the Linux operating system for the application server components. The core Oracle suite of applications includes Accounts Payable (AP), Accounts Receivable (AR), General Ledger (GL), Fixed Assets (FA), Purchasing (PUR), I-Procurement (internal to TC only), I-Payment, I-Receivables, I-Store, Transport Canada Billing System (TCBS) and various interfaces to internal Transport Canada systems and external systems such as the Receiver General of Canada. The Oracle Portal (10g) technology solution was implemented to create an Employee portal and a Manager portal to expose financial information, and has been successfully used by hundreds of T.C. users. Transport Canada is actively participating in the Oracle Cluster Group (Oracle Financials Shared System) project. The main goal of the project is for Oracle Cluster Departments to migrate to a single standardized system of Oracle Financials based on a common Chart of Accounts, common business processes, common functionality, and hosted by a common service provider.

- Transport Canada provides process support to the human resources (HR) professionals working in its HR offices across Canada via the Transport Canada Integrated Personnel System (TIPS), a suite of some seventeen integrated applications serving the various HR disciplines. The TIPS applications utilize the Gupta Centura Team Developer (v.3) platform and share a common Corporate HR Database (Oracle 10g). TIPS is presently a shared system solution for CSA and CED\_Q and contains many features, such as a direct link to the PWGSC Regional Online Pay System. Self-service to managers, employees and the Canadian public are provided through a smaller suite of eight Web applications on various platforms - all utilizing the same Corporate HR database. These include LEX, which provides full workflow support to Leave and Extra Duty, a single sign-on HR services portal and an automated organization chart generation / HTML publication facility that is available to managers. Significant changes have been incorporated over the last 12-18 months to comply with the coming into force of PSEA and PSMA, and to provide further self-serve business efficiencies such as the on-line processing of HR Service Requests (HRSR), the Staffing Tribunal Automated Complaint Tracking System (STACTS) and the Staffing Action Management System (SAMS).
- A departmental e-mail system continues to evolve in support of internal and external electronic communications requirements. A MS Exchange 2007 rules-based architecture allows users to dynamically manage the inflow and outflow of electronic information through an intuitive, highly graphical interface. Outlook Web Mail has been enabled that allows TC employees to access their Corporate e-mail via the Internet.

- Information Management Environment and Initiatives
  - The Records, Document and Information Management System (RDIMS DM) is part of the Shared System Initiative of the Government of Canada. This system was installed on every desktop within Transport Canada as of August 2002. RDIMS DM is an integrated set of tools and rules that facilitate the creation, capture, storage, organization, retrieval, sharing, re-use, protection and disposal of information in an electronic environment, regardless of the format and without geographical or organizational barriers. It is a fundamental component of the infrastructure necessary for the government to deliver on the Government's information management agenda. The RDIMS DM implementation for Transport Canada enables the storage of Unclassified and Protected-A information. Provision for storing Protected-B information is a requirement for the future evolution of RDIMS DM. RDIMS DM is a key information service supporting the Government of Canada Management of Government Information (GC MGI) and the new government Information Management Policy. RDIMS DM main functionality includes:
    - Document Management: physical control of information objects including access control, version control, and protection from unauthorized changes.
    - Records Management: life cycle management of records and documents, classification, retention and disposal.
    - Full Text Search: content based search and retrieval of a document.
    - Workflow: defined flow of information to people and processes based upon rules. The integration between RDIMS and ccmMercury provides workflow functionality.
    - Imaging: scanning, viewing, Optical Character Recognition to create editable text from images.
    - Reporting: Standard and ad hoc reports.
    - Transport Canada partnered with PWGSC in FY 2007/08 to upgrade RDIMS DM (v5.1.0.5 SR6 MR1), in 2009 an additional upgrade to RDIMS DM v.5.1.0.5 SR6 MR5 was completed. Transport Canada is currently in the process of upgrading RDIMS DM to v5.2 as part of the Microsoft Office 2007 / Exchange 2007 Upgrade Project. It is the department's objective to maintain one comprehensive document repository to ensure effective sharing and management of document based information holdings for the department.
  - Workflow: ccmMercury is the Department's primary application tool that allows business units to monitor and manage ad hoc workflow and processes, track tasks, documents and other items. Examples include: Executive documents, correspondence, projects, work orders, permits, phone calls, monitoring and

inspection reports, application security patches, frequently asked questions, agreements, library items such as reference questions and interlibrary loans, etc. ccmMercury is integrated with RDIMS, enabling enhanced workflow for business units that require tracking while ensuring document attachments are stored and maintained in the corporate repository. This combination has enabled development of more effective business processes in several business units and is encouraging similar initiatives in others. To date, more than 30 database applications have been created using ccmMercury which has proven to be a cost-effective and efficient application development platform.

- Records Management Information System (RMIS) to manage its legacy hard copy files (paper) and Livelink (RDIMS) for electronic documents. Transport Canada uses the Automated Labelling Process System (ALPS-WEB) to produce labels for large mailings.
- Transport Canada is committed to the Government of Canada (GC) IM Strategy and complying with the requirements of the Treasury Board Secretariat (TBS) Policy on Information Management and other central agency IM policy instruments. Through the IM Strategic and Implementation plans, Transport Canada has completed a number of activities covering the broad spectrum of Information Management. These activities include:
  - The development and implementation of IM policy instruments such as the TC IM Directive, the TC Directive on IM Procedures for Employee Departures, the TC Standard for Backup Retention Periods, and the TC Data Administration Metadata Standards;
  - An IM/IT Governance Framework;
  - The development of a sustainable and ongoing national IM awareness training program;
  - An Information Management Succession plan for NCR;
  - The adoption of Transport Canada Metadata Standards department wide;
  - The review and inclusion of Information Management principles into the departmental System Development Life Cycle (Macroscopic Productivity Centre), the Transport Canada Change Control Board (CCB) process and Non-standard software justification;
  - The development of the Information Management Compliance Review Methodology;
  - The development of a Performance Measurement Framework (PMF) for IM.

- Transport Canada has a Data Administration Framework and Standards that deal with Application Development, Application Maintenance, Data Modelling, Information Needs Assessments, Information Management Plans, and Data Warehousing. There are currently three documents which deal with Transport Canada's Data Administration:
  - Transport Canada Data Administration Metadata Framework;
  - Transport Canada Data Administration Metadata Standards;
  - Transport Canada Data Administration Quick Reference Guide.
- With the release of the TBS Policy on IM in July 2007 and its supporting directives (Directive on Roles and Responsibilities, October 2007, and Directive on Record keeping, June 2009), Transport Canada has reviewed and updated all its Information Management standards, directives and documentation (IM Awareness Sessions, Departmental Information Management Directive etc.). A new annual Transport Canada Information Management Strategy/Action Plan was created in 2008 and is reviewed on a yearly basis. The current IM Strategic Plan FY 2010/11 has been updated to address the implementation requirements of the GC IM Strategy, the Policy on IM and other central agency IM policy instruments and the evolutionary IM needs within the department over the next four fiscal years.
- Transport Canada has built on the original Transport Information Management Compliance Review Methodology and performed a pilot compliance review of Transport Canada Audit and Advisory Services (A&AS). Additional Information Compliance Reviews has been done nationally and will continue to be performed in FY 2010/11.
- The Transport Canada Library's integrated library system, includes an online catalogue of the library's holdings with acquisition, cataloguing and circulation modules that assist in the processing, classification and distribution of library materials to departmental employees, other federal government departments and the public. The integrated library system is a COTS product called Horizon and earlier this year, the server was upgraded to Windows 2003.
- The Transport Canada Thesaurus provides a hierarchical controlled vocabulary of terms for Transport Canada to use in the subject element of metadata, which describes both web publications and web pages, as well as to be indexed into departmental systems. These terms are used to enhance the search results in departmental systems such as the Web content management system and the search engine (both UniFind and Google Search Appliance). In 2009, the Thesaurus was upgraded to comply with CLF 2.0 requirements.
- The Transport Canada Virtual Library is an Intranet site that allows for informational self-service by providing desktop access to library resources such as subscription-based electronic information resources, digitised collections,

research portals and access to other library collections. As part of this Intranet site, there is a Virtual Library application, which facilitates the networking of CD-ROMs and DVDs on reference materials, technical standards and aircraft manuals for Transport Canada employees across the country.

- In collaboration with the libraries of the Canadian Transportation Agency, the Transportation Association of Canada, the Transportation Development Centre and the Transportation Safety Board have created a web site called the Canadian Transportation Research Gateway (CTRG). This Web site is a comprehensive, bilingual collection of Web-based resources on the subject of transportation in Canada. The Canadian Transportation Research Gateway (CTRG) is intended to provide researchers, students, government and industry with convenient access to evaluated Canadian transportation research resources through a single gateway. In 2009, the CTRG was upgraded to comply with CLF 2.0 requirements.
- Collaboration and Web 2.0 technology refers to programs that help people work collectively regardless of location and include social media tools (Facebook, Twitter, Youtube etc), shared calendaring and scheduling, file sharing, collective writing, e-mail handling, communities of practice (COP), public consultation, bulletin boards, shared database access, electronic meetings, Instant Messaging etc. Transport Canada has performed an in-depth user requirements analysis and is making strides at the implementation of Web 2.0 technologies.
- There have been a number of Data Warehousing projects completed including Rail and Marine Occurrences. The completion of the BIRM ORACLE 11i reporting project using the Data Warehousing methodology marked a major milestone in Data Warehousing for the department. New initiatives are under way that will expand the scope and capability of the corporate Data Warehouse including Civil Aviation Business Intelligence Infrastructure (ABII) and Enterprise Resources Management System (ERMS). There will also be activities to increase the scope and breadth of Transport Canada Core Tables.
- The SAP's Business Objects Business Intelligence platform and tools have been implemented to address the reporting, analytical and DashBoard requirements of various user groups at Transport Canada. Casual users and information consumers can leverage various web interfaces (InfoView, Oracle Portal etc) to access content, Crystal Reports for enterprise reporting requirements, Web intelligence and Desktop Intelligence for power-users and analysts and: Xcelcius for DashBoard analysis. The department stands to benefit from a Data Warehousing and operational systems reporting approach and the use of Business Intelligence Software in the following ways:
  - Accelerate the definition of new performance indicators;
  - Enable the creation and iterative development of integrated performance measures where real business value can be derived, e.g. average cost/inspection by mode by inspection type;

- Enable a consistent understanding of trends and performance measures throughout the organization;
  - Eliminate redundancies in data collection and analysis;
  - Enable improved analysis and reporting of operational data;
  - Reduce / eliminate paper reporting, a typical benefit derived by most organizations embarking on a Data Warehouse.
- Management of Information Technology Security Standard (MITS)
    - MITS, a TBS standard, defines baseline security requirements that all departments must fulfil to ensure the security of information and information technology assets and is the key to GC-wide effort to improve IM/IT Security. Transport Canada has achieved MITS compliance.
    - The priorities for IM/IT Security at Transport Canada include:
      - Inclusion of IM/IT Security strategic objectives in the newly mandated “Departmental Security Plan”;
      - Continuation of an Enhanced Security Awareness Program;
      - An increased emphasis on the responsibilities of managers and employees;
      - The safeguarding of TC’s sensitive information assets;
      - An improved monitoring/auditing framework;
      - Implementation of advanced IM/IT Security tools.

### 3. INFORMATICS DRIVING FORCES

Exhibit V.3 outlines some key influences, which will affect the informatics activities within the department.

- IM/IT exists to support service delivery and business needs. Development, implementation, and application support must be done in close cooperation with lines of business. Because business requirements drive IM/IT activity, the department needs to:
  - Find and capitalize on opportunities by coordinating plans and initiatives across the organization through improved governance, communication and planning processes.
  - Balance large department-wide and smaller initiatives.
  - Integrate IM/IT into the business planning process.

The IM/IT priorities, needs and opportunities of TC Service Lines suggest the following “top ten” common department-wide IM/IT priorities:

- Information integration, interoperability and interchange – including the consolidation / rationalization of existing information systems.
- Business Information Intelligence - including Enterprise Reporting, Data Warehousing and Business Intelligence tools for information access, analysis, and reporting of financial and non-financial information.
- Document and Information Management – the upgrade to RDIMS DM 5.2 with ccmMercury in order to be compatible with MS Office 2007 department wide, continued IM Awareness training, Information Management Integration into Application, Development and Maintenance and Information Management Strategic Plan FY 2010/11 - 2013/14.
- Security - Electronic Signature, Authentication, Privacy, and Encryption of documents, ability to house Protected “B” documents in an electronic repository (RDIMS DM) (put on hold), information and electronic communications.
- Internal Service Improvement - specialty information systems, such as Geographic Information Systems (GIS) and Wireless / Mobile worker applications, collaborative solutions, new desktop tools (migration to MS Office 2007 / Exchange 2007 in FY 2010/11).
- External Services Delivery – initiatives which provide electronic information, transactional and collaborative capabilities to external stakeholders.
- Communications – an evolved infrastructure providing speed of access for mobile / remote usage while incorporating appropriate security.

- The departmental IM/IT governance structure has evolved to include a Business IM/IT Council, IM/IT Investment Committee and IM/IT Architecture and Standards Committee made up of program and IM/IT senior managers. The Council functions as a liaison between Transport Canada and the Executive Management Committee (TMX) through the ADM, Corporate Services. The Council, as a departmental governance body, establishes sound IM/IT principles and guidelines and recommends IM/IT investments (through the recommendations of a IM/IT Investment Committee) in support of program requirements, approves IM/IT standards and architecture (through the recommendations of an IM/IT Architecture and Standards Committee), and ensures integrated IM/IT project planning, all in support of program delivery.

The Project Oversight Secretariat (POS) was launched on April 01, 2009 to build on the existing IM/IT governance structure and processes, and improve overall management of IM/IT projects. The key objective of POS is to facilitate the successful delivery of IM/IT projects by the various IM/IT, business/program area community contacts/resources within TC. The POS supports and is in-line with Treasury Board's Policy on the Management of Projects and the Policy on Investment Planning-Assets and Acquired Services. As required by these policy directives, the POS will develop a departmental capacity to improve the overall management of IM/IT projects.

- By leveraging the revised departmental IM/IT governance structure, the annual Transport Canada IM/IT Strategic / Investment Plan was approved in early FY 2010/11, and will evolve to meet the Department's requirements and will be driven by Transport Canada's business direction and priorities. The main purpose of this Plan is to guide the development and management of the IM/IT environment within Transport Canada to contribute to effective program delivery and to meet a broad set of evolving client needs. These clients are diverse, from external stakeholders who help shape policies, to businesses and citizens transacting with Transport Canada, and to Transport Canada employees working together, with external clients, with other government Departments and with other levels of governments in order to assure the best transportation systems.
- The Transport Canada IM/IT Strategic / Investment Plan lays the foundation for a business driven IM/IT investment program, ensuring that all investments across all business lines contribute toward corporate success, maximize business benefits and minimize risk. Realizing the TC IM/IT strategic / investment plan will result from a combination of reductions and careful management of costs, both through the IM/IT efficiencies, investing in new projects (feasibility studies, pilots, new projects and enhancements) and ensuring that the IM/IT goals and objectives not addressed by specific investments are achieved through other avenues through a series of planned, budgeted activities. Departmental IM/IT related spending must remain in line with the business needs and each project undertaken must be linked back to the goals and objectives of the TC IM/IT strategic / investment plan.

**EXHIBIT V.3****INFORMATICS DRIVING FORCES**

- Transport Canada has plan in place to deal with Treasury Board Information Management Standards (Standards on Metadata, and Geospatial Data).
- Integrating and consolidating existing information and information systems.
- Implementing Enterprise Reporting, Business Intelligence including data warehousing.
- Improving document and information management.
- Implementing new security features and safeguards including electronic signatures.
- Broaden the use of e-services to serve external stakeholders.
- Develop the communication infrastructure without compromising security.
- Assessment of Protected B information handling capability.

## 4. PLANNED CHANGES AND UPCOMING PROJECTS

The envisioned IM/IT capabilities for Transport Canada include:

- The Transport Canada Intranet (TCI) network infrastructure capacity and technology is continuously upgraded to meet evolving business needs (e.g. supports combined wireless, voice, data, images and video).
- Application services are delivered in a consistent and efficient manner.
- There exists a common means of ensuring that applications are secure.
- Clear IM/IT governance, management and accountability model is in place.
- Service Level Agreements (SLA) are in place to ensure consistency and measurability of IM/IT services delivered.
- A department-wide Information Management Strategy is in place and widely adopted.
- An Information Management Compliance Review regime is operational.
- There exist sufficient skilled IM/IT resources to maintain and evolve the IM/IT environment based on business needs. Succession planning is being emphasized to mitigate the effects of departures due to retirement.
- A department-wide life cycle approach is adopted to maintain desktop, server and associated software.
- Legacy and new application systems are integrated and interoperable.
- Enterprise Electronic Document Management tools will be fully integrated with applications and an integral part of the way people do business.
- The philosophy of “Information as a valued asset” will be ingrained in the Transport Canada culture fostering the sharing and reuse of information.
- Solid Information Management and record keeping practices are part of the normal business processes in Transport Canada. This includes training new and existing Transport Canada employees on Information Management roles and responsibilities.
- All Information Management and record keeping processes are fully integrated together and across application systems.
- Transport Canada becomes a learning organization where knowledge management plays an integral role.
- The use of Enterprise TC Directory will be fully implemented into all applications and related processes within Transport Canada.

- A single search engine is adopted for all web content searching.
- A single solution is implemented for web site content management for both Intranet and Internet web environments.
- Common standards are adopted in the areas of information, application, technology and security.
- An enterprise information model is in place and the acquisition and implementation of a Metadata Repository.
- Enterprise Reporting and Business Intelligence software solution is utilized for all Transport Canada reporting.
- Information Management accountabilities are included in the accountability accords of Transport Canada's Senior Management.
- An Internal (intranet) Access Portal is available for employees to access all work-related information.
- A single-sign on approach to all applications.
- Transport Canada's automated Systems Management tool HP Service Manager 7 is an ITIL-based system used nationally to manage all Change requests and Problem Management incidents. This system has been in use at Transport Canada for approximately one year.
- Transport Canada's automated email storage technology known as Evault, allows Transport Canada to better manage unstructured data stored in Microsoft Exchange mailboxes and PSTs.
- Mobile workers such as inspectors are provided with mobile services that are more complex than can be provided on a laptop computer. This will require new communications services including satellite, high-speed cable services and other alternatives. Handheld devices and wireless solutions will be required.
- TC Internet/intranet sites evolve from static to transaction-oriented pages and content increases both for internal and external consumption. New self-service applications and enabling infrastructure are being envisioned for TC in support of the e-services (external service delivery) agenda.
- Sound Information Management Principles will be incorporated into the Application Management Framework and the Macroscopic System Development Life Cycle (SDLC).
- Transport Canada business planning practices and Business Cases will include Information Management requirements.

Several IM/IT related projects will proceed in 2010-2011 fiscal year (pending funding allocation) to improve program delivery. This list of projects includes:

- Upgrade of Web load balancing and clustering technology to meet industry standards.
- Implementation of Microsoft Visual Studio 2010 Team Foundation Server to support application development.
- Implementation of an Application Performance Management or Monitoring tool that would allow pro-activity in the problems detection, identification of the problem root causes and quicker resolution. The solution would apply on all environments of the web infrastructure.
- Infrastructure Renewal - Transport Canada's corporate systems will require ongoing hardware and software upgrades and/or replacement to maintain or enhance their operational capabilities.
- Web Content Management System – Transport Canada has an established Web presence with more than 105,000 externally facing Web pages and over 100,000 internally facing Web pages as well as Extranet Web sites. The scope of the project is to purchase, develop and implement OpenText's Web Services (formerly known as RedDot) Web Content Management System (WCMS) solution. The Web Solutions Content Management System and Web Solutions LiveServer products will assist in the creation and management of this large and dynamic collection of Web materials, including HTML documents and their associated assets. Replacement of the existing UniFind Search engine to the Google Search Appliance will provide improved search results and indexing of metadata, as well as improved accuracy and efficiency of query results, in both official languages.
- TC's Enterprise Resource Planning (ERP) Upgrade (Oracle Footprint Expansions) - Transport Canada's (ERP) system, specifically, Oracle applications, is the official set of books for financial accountability and provides a suite of business applications serving both TC employees and customers. Since its implementation in 1994, the system has typically followed a five-year life cycle in order to remain technologically up to date, reliable and responsive to departmental needs. The second phase of the project includes planning and analysis of the upgrade of Oracle Financial Analyser (OFA) to SAP's Hyperion Financial Analysis product and the migration to Oracle R12.
- Environmental Information System - This system seeks to integrate information from disparate datasets, bringing together textual and spatial data held by Transport Canada. The data will be geo-referenced and displayed as different layers or views to the user and displayed through a map interface over the Intranet to real property and environmental practitioners across the country. Once fully implemented, the EIS will enable the Department to meet Treasury Board requirements for custodians of federal real property to report spatial information pertaining to land holdings and contaminated sites. It will also capture data relevant to the Department's

environmental obligations and responsibilities and allow Transport Canada's Environmental Programs Branch to share information relevant to the Environmental Management System, Contaminated Sites and Environmental Assessment.

- **Transportation Security Information System (TSIS)** - TSIS is used by Transport Canada Security Inspectors to record the results of inspections, investigations and infiltration tests in the aviation mode. The system was originally built to support all Security Modes, the redevelopment project will size the application in order to retain the multi-modal capabilities. The system has already been designed to record inspections for cruise ship operations and is the current source for operational data used by regional and headquarters management as well as by CATSA officials. It also includes data input by inspectors at headquarters regarding foreign inspections and exemptions. TSIS is a data collection, data storage and information reporting tool that represents a mandatory component of the security inspectors' tool kit and which is a vital source of operational and strategic information for the management of the security programs in Transport Canada.
- **Fleet and Test Management System (FTMS)** - FTMS is a new client-server system that will combine four existing Road Safety systems into one enterprise-level application on a Windows.NET front-end interface with an Oracle back-end database. These systems provide the essential Fleet management system tools to lifecycle manage the Road safety Directorate's fleet of test vehicles from purchasing, monitoring, enforcement and research testing through to disposal of asset. FTMS will provide a single robust information management system.
- **Transportation Object Dictionary (TOD)** - TOD project aims to establish a database access bridge between the numerous Transport Canada systems as well as external data sources. The project's main objective is to harmonize and logically integrate disparate information systems. It is expected that this will translate into an increased ability for the Department to dynamically address issues and provide timely response and accuracy in a cost effective fashion. Initial focus has been on the aviation sector and initial research has identified over 100 stand-alone air related databases within Transport Canada allowing for very little data sharing and standardization. The scope of the project is multi-modal and will include such attributes as: carrier, location, occurrence, make/model, operating certificate and licence. This project is aimed at addressing the genuine need to pull together the information available through several group's applications or databases to support the Department's business needs on both the Policy and Safety and Security side.
- **Surface Infrastructure System (SIS)** - SIS, a secure, collaborative web-based application, currently monitors contribution programs with significant project and financial information and maintains this monitoring throughout the life of a contribution agreement. Partners (provinces, territories, municipalities, etc) currently submit, via SIS, project, contract information, budget forecasting and submit claims. Transport Canada's departmental officials review all submissions and ensure that they comply with financial policies established by Treasury Board. Presently, over 200 users from various groups within and outside Transport Canada

currently utilize the system. This project seeks to enhance the functionality of the existing Surface Contribution Management System by centralizing the Surface Infrastructure Program's contribution agreement/project information related to results based management, performance measurements and evaluation information. As well, the project will focus on issues relating to the creation and enhancements of SIS data capture fields. Both initiatives are required in order to meet reporting requirements of both current and new funding programs (i.e. Building Canada Fund, Asia Pacific Gateway Initiative, etc.). The project will also address items raised by the Auditor General of Canada regarding improving information management aspects.

- Microsoft Office 2007 / Exchange 2007 Upgrade Project Launched in 2008, the MS Office 2007/ Exchange 2007 Upgrade Project is a 3-year IM/IT initiative (FY 2008 – 2011) that will lead to the deployment of latest-generation key IM/IT components such as MS Exchange 2007, RDIMS 5.2.X, ccmMercury 5.3.X, and Symantec's Evault 7.5 as well as, of MS Office 2007, on the corporate desktops and Citrix environments. TC's current baseline office suite (MS Office 2000 and Outlook 2003) to Microsoft Office 2007, including: Outlook, Word, Excel and PowerPoint. First released to the corporate desktop in 2002-2003, MS Office 2000 is an aging product with an outdated feature set and one that is reaching the end of its support lifecycle. This upgrade is also vital for Transport Canada to retain full compatibility with other GC Departments as well as with its external clients and stakeholders. The MS Exchange 2007 upgrade process will also lead to the introduction of MS Windows Server 2008 as a new and supported department-wide Server Operating System platform. The overall Project also includes an end-user training component (MS Office 2007 and RDIMS 5.2.X) to help ensure a smooth introduction of these latest-generation software products within TC. The Project, which is currently well under way, is scheduled for completion in March 2011.
- Management, Resources and Results Structure (MRRS) Implementation and Revised Program Activity Architecture (PAA) - This project serves to assist TC senior management decision-making in support of Treasury Board's Management Resources and Results Structures policy. This project encompasses the system tools that will be developed, in conjunction with existing management and business intelligence data and reporting, to support the Department's management obligations. Meeting management reporting needs under the new MRRS policy is critical, because Departments are expected to use MRRS information in their day-to-day management. This information is to be embedded in all phases of the expenditure management cycle (commenced January 2008) and will become the authoritative basis on which departments and central agencies will conduct reviews and analyses to assess whether programs are consistent with federal priorities and focused on results and value for money. The next phase of the MRRS project will now implement the automated scorecards in support of the Performance Measurement Framework and to support status reporting on approved capital projects and it will also develop a risk management solution, as defined through the approved business requirements.

- Management, Resources and Results Structure (MRRS) Dashboards - This is a complementary Project to the MRRS Implementation and Revised PAA project. This project is the foundation piece of performance measurement in Transport Canada. The integration of financial and non-financial information found within MRRS, along with results and risk information, will provide executive management with improved access to key information for planning and decision-making. The work conducted to build the performance repository and to integrate financial and operational data will ensure compliance with the intent of the TB policy on MRRS. This project will delve deeper into integration issues, visualization of financial and operational data, as well as automation of business processes currently dependent on office automation tool such as Excel and Word. The intended user community for MRRS Dashboards is the executive management team and senior managers involved in governing Strategic Outcomes and the Program Activity Architecture. Dashboards facilitate self-serve access to information for decision-making purposes. The application will also create efficiencies for functional specialists supporting senior management information needs.
- Marine Security Information System (MSIS): The creation and implementation of MSIS is to exchange, receive, analyze, and discriminate input that will improve security in Ports, Facilities, and Vessels in Canada from coast to coast. To fulfil this responsibility, Marine Security requires that an information management system be initiated that will provide a WEB/Intranet-based activity reporting system for inspectors and Headquarters' staff. It is both a data collection and information management system to capture, monitor and track security-related activities of interest to Transport Canada. Furthermore, MSIS is expected to provide an effective reporting and tracking mechanism that allows inspectors to have access to the most up-date and current data on any number of different issues, from facilities to the frequency of vessels, to ongoing investigations.
- Navigable Waterways Database System - The Navigable Waterways Database System (NWDS) is a computer system (Oracle database using Oracle Forms and Reports) intended for the management of all applications requesting authority for the construction of works built in navigable waterways in Canada under the National Waters Protection Act (NWPA) and the National Energy Board (NEB). This initiative will improve the system's ability to provide the best possible information for planning, reporting and decision making while promoting consistency in program delivery. The project will focus on: developing a highly functional Geographic Information System (GIS) component, designing the application consistent with a comprehensive Marine Safety Core Architecture, and increasing the scope to include Inspection data and Aboriginal consultation requirements.
- Integration of Applications with RDIMS DM/CCM Mercury - The purpose of this project is to allow the enhancement of a number of "key" departmental business applications to provide the capability of integrating unstructured data (stored in RDIMS DM, ex. Word documents, faxes, spreadsheets, diagrams etc with its corresponding structured data (from the business database itself, e.g. tombstone

data, inspection data, registration data, etc.) to provide a single window of access into a given business line's electronic information holdings (e.g. a virtual repository). It should be noted that while significant benefits have been achieved in managing unstructured information with the implementation of the RDIMS DM solution, even greater benefits would be anticipated with the integration of both information types.

- **Public Service Modernization Act (PSMA) Implementation** - The Public Service Modernization Act is bringing legislative changes that affect the way departments do HR business. Increased delegation and accountabilities, and modifications to business processes and practices bring new information requirements and additional reporting requirements. To ensure Transport Canada can comply with those requirements, the Human Resources Management Systems (including TIPS) will need to be updated in order to support the new information and reporting requirements.
- **Aviation Business Intelligence Infrastructure (ABII):** The project objective is the development of an infrastructure to provide the tools required for the Aviation Safety Intelligence Division to produce and deliver comprehensive analysis and reports in a more cost effective, efficient and accessible manner to all of Civil Aviation. The anticipated outcome of the project is the implementation of a tool to assist in decision-making with respect to development of policies, regulations and standards. It will effectively rationalize the process by which analysis is done and results delivered, increasing productivity and producing cost avoidance for all of Civil Aviation. It will allow for different user interfaces for different user types; improve ad-hoc query abilities; and improve the ability to share and disseminate analysis and reports. The development of the infrastructure will reduce duplication of information and will increase the ability to perform analysis with information held within separated systems from one centralized location.
- **National Aviation Safety Intelligence Management System (NASIMS):** The Aerodromes and Air Navigation Branch has a number of data repositories, both electronic and otherwise. There is a requirement to modernize the databases/data management tools into a common data management system. The goal of this initiative is to design and implement a common data management system that meets the requirements of the integrated branch. NASIMS Phase 3 will continue to address the integration and assimilation of smaller systems and the inclusion of several regional systems creating a larger and more standard National perspective for the delivery of the Civil Aviation programs. Opportunities such as the development of a National Obstacle/Obstruction module within NASIMS would cause the de-commissioning of several regional systems in a variety of formats including Microsoft Access and Microsoft Excel.
- **National Collision Database (NCDB):** The NCDB contains data on all motor vehicle collisions reported annually to Transport Canada by the thirteen Canadian jurisdictions. It comprises 1.3 million records per year of data and resides on the corporate server. The NCDB is a legacy database that has existed since 1984. The

goal of the project is to put a subset of about 300,000 of the records online annually and provide query tools to clients. Thus providing them with direct access to collision data. Historically, the data have been disseminated by ASFCC staff that use SAS statistical software to query the database. There are about 300 requests for statistical information made annually to ASFCC. The clients are road safety researchers and agencies, media, police forces, education institutions, road safety colleagues, the general public, and anyone with an interest in road safety issues. These clients use the collision data to conduct business in the community that supports Transport Canada's business of saving lives, mitigating injury, providing road safety education, and developing intervention strategies.

- Collaboration/Web 2.0 Infrastructure: In 2006, Transport Canada collected requirements and established guidelines for collaboration. The technology maturity and business imperative for a common departmental approach were weak at that time and, therefore, there was no movement beyond the requirements and guidelines stages. There has since been such an evolution in technology and electronic business interactions that the business imperative is now driving the need for this a common approach. The intent through this project is to establish a common service infrastructure for collaborative online services that can be used by all departmental employees. The project will develop a general set of technical and functional requirements that will meet the need of all TC business units. It will then procure and implement this infrastructure and conduct a pilot project to validate the infrastructure capabilities and assess policies, terms of use and support procedures.
- eInnovation Forum: The eInnovation Forum project is a complementary project to the Collaboration/Web 2.0 Infrastructure project. The project seeks to implement a solution that will:
  - facilitate collaboration between internal and external stakeholders, partners in exchanging information and research and advancing innovative strategies for the Canadian Transportation sector
  - promote and foster innovation for Canadian transportation systems and act as a knowledge broker
  - provide a single inventory of national and international transportation technologies
  - provide an environment where they can lead by example in the area of Innovation.
- Canutec Information System (CIS): The main objective of the CIS project is to provide CANUTEC emergency advisors with more effective conference call capabilities and more efficient access to information required to respond to emergency calls, public inquiries and simulation exercises. Part of the scope of the approved project strategy includes upgrading the CANUTEC communication system to allow for integration with the proposed CIS. Part of the CIS includes an electronic logbook, which will provide advanced call tracking features to guide

advisors in capturing information, ensuring that calls are properly logged, and that statistics can be produced accurately. Integration of a robust communications system with the information system would allow for recording and logging of all communications data (voice) and metadata (time, length of call, caller ID, etc.) with the benefit of click dialling and sophisticated call handling for conference calls. Once the communications system has been integrated with the CIS, all the above information will be interconnected thus permitting the emergency advisors to concentrate on the provision of life saving information.

- **Fluidity Indicator Data Collection and Processing:** This project will address the question of fluidity/reliability of Canada's transportation system. It will provide empirical evidence of this fluidity/reliability; or lack thereof. Furthermore, it will allow the department to identify the "friction" points in Canada's transportation system. The friction points are the points where the transportation system faces congestion or infrastructure-related recurring delays. This project will lead to the creation and maintenance of a fluidity indicator depicting the fluidity/reliability of the transportation system. The models and algorithms used to calculate the values for these indicators require huge amounts of raw data. That data comes directly from industry on a national and international scale. Due to the nature of the data involved, it cannot be bought off the street nor does it exist at Statistics Canada. Therefore, a large-scale data collection process needs to be put in place within Economic Analysis to continuously feed the analysts producing values for these indicators. The goal of this project is to implement the model developed to show the fluidity/reliability of the system and help establish that data collection process and treatment over the long-term.
- **Modelling and Forecasting Tools:** The Economic Analysis Directorate has the mandate to conduct socio-economic research and economic analyses, develop forecasts and models and, to collect and manage transportation data. This project will increase the capacity to develop forecasts and models is currently, largely limited to air passenger traffic. In this context, this project seeks to expand the modelling and forecasting capacity to include passengers and freight for all modes of transportation. New forecasting software will be required. However, the requirements for software will generally be limited to mathematical modelling / forecasting.
- **Rail Integrated Gateway System (RSIG):** The project was initiated to provide Rail Safety officials with a comprehensive and reliable view of the systems resources and results achieved under their management in order to make informed decisions. RSIG is a series of fully integrated functional modules representing various program areas and supporting systems to meet the operational and reporting requirements for the Rail Safety Program. RSIG is a multi-year project to be completed over 2 phases. Phase 1 will include the design, the development and the implementation of the RSIG Infrastructure, the basic operations and the common integrated functionalities to support the RSIG modules. Phases 2 will include the development and implementation of the RSIG modules. RSIG is an enterprise scale application designed to meet the needs of both headquarters and regional requirements within

Rail Safety in a highly integrated manner. It will also support the on going reporting of the Department and Treasury Board's key performance metrics.

- Rail Integrated Gateway System (Portal): This is a complementary project to RSIG. The project is aimed at developing data exchange capability with external stakeholders with a view to collecting, analyzing and disseminating company data necessary to determine railway company safety performance. A robust program of data collection, analysis and dissemination will enable Transport Canada to be at the centre of the effort to understand and interpret rail safety data, and translate it into policies, programs and regulations that advance railway safety, as well as allow the department to better assess rail safety performance and better target resources towards the areas of greatest risk.

## 5. BUSINESS OPPORTUNITIES

Exhibit V-4 summarizes the business opportunities in the department.

- Consulting is required on an on-going basis. Some areas include:
  - LAN / Desktop technical support
  - Service Desk Agent technical support
  - Application development and maintenance
  - Web Site development and publishing
  - Systems Management
  - Problem and Change Management
  - Data Warehousing
  - Business Intelligence
  - Information Management
  - Data Management
  - Internet/Intranet Web Site Technical Support
  - Electronic document management and electronic forms
  - IM/IT security
  - Evaluation of emerging technologies
  - Strategic Planning
  - Development of IM/IT RFPs
  - Project Management.
- Existing corporate systems will require hardware and software upgrades.
- Planning is under way for revised server and desktop hardware and software.
- Implementing changes/enhancements to the Oracle ERP Financial and Material Management system.
- Implementing changes/enhancements to the HR application suite (TIPS) to achieve PSMA and PSEA compliance and business efficiencies.

- Implementing program related IM/IT initiatives.
- An operational review against best practices for Storage Area Networks could be performed.
- Expanding the current infrastructure for secure exchange of information.

**EXHIBIT V-4****BUSINESS OPPORTUNITIES**

- Technical, application and strategic consulting is required on an ongoing basis.
- Existing corporate systems will require hardware and software upgrades.
- Planning is under way for revised server and desktop hardware and software.
- Expanding the current infrastructure for the secure exchange of information.
- Implementation of Information Management activities in support of the GC's Information Management Policy.
- Implementation of new web site content management software for the Internet.
- Implementation of additional program related (internal and external e-services) initiatives.