



## **Functional Requirements Document**

(Guide S50 Version 1.0)

*for*

# **TRUCKING LOGISTICS MANAGEMENT SYSTEM**

**Version 1**

*Prepared for*

**CSIT 327 – INFORMATION MANAGEMENT 2**

*Submitted to*

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## 1. Dashboard

- **Must Have:**
  - The system must display a dashboard accessible by all user roles.
  - The dashboard must provide real-time tracking of container statuses for all users based on their role.
- **Should Have:**
  - The dashboard should display summary statistics such as total bookings, number of containers in transit, and number of deliveries completed.
- **Could Have:**
  - The dashboard could include alerts for delayed or problematic deliveries.
  - The dashboard could provide visual aids like graphs to display the performance of bookings and deliveries.

## 2. Customer Management

- **Must Have:**
  - The system must allow office staff and admin users to add, edit, and remove customer profiles.
  - The system must link customer profiles to booking numbers.
- **Should Have:**
  - The system should allow office staff to search and filter the customer list based on criteria such as customer name, contact information, or company name.
- **Could Have:**
  - The system could allow bulk uploads of customer data using a CSV or Excel file for large-scale customer additions.

## 3. Booking Management

- **Must Have:**
  - The system must allow office staff to create and assign booking numbers to customers.
  - The system must assign containers to a specific booking number.
  - The system must provide real-time status updates for each booking (e.g., pending, in transit, delivered).
- **Should Have:**
  - The system should allow users to filter bookings by status, customer, or booking number.
  - The system should automatically notify office staff when a booking is updated or completed.
- **Could Have:**
  - The system could support automated creation of recurring bookings for repeat customers.

## 4. Container Management

- **Must Have:**
  - The system must allow office staff to assign containers to specific booking numbers.
  - The system must allow drivers to update the status of containers in real time (e.g., received, in transit, delivered).
  - The system must allow drivers to capture the recipient's name and obtain a digital signature at delivery.
- **Should Have:**
  - The system should track and store detailed container information, including size, weight, and contents.
- **Could Have:**
  - The system could provide a feature to automatically assign available containers to bookings based on container size and booking requirements.

## 5. Driver Interface

- **Must Have:**
  - The system must allow drivers to view their assigned containers and booking numbers.
  - The system must allow drivers to update the status of containers, including marking them as delivered.
- **Should Have:**
  - The system should notify drivers when a new container is assigned to them.
- **Could Have:**
  - The system could integrate with GPS services to allow drivers to track the route and estimated delivery time for each container.

## 6. Customer Interface

- **Must Have:**
  - The system must provide a dashboard that allows customers to view the real-time status of their bookings and containers.
  - The system must restrict customer access to only their own bookings.
- **Should Have:**
  - The system should notify customers via email or SMS when their container status changes (e.g., received, delivered).
- **Could Have:**
  - The system could allow customers to schedule or reschedule delivery times through the interface.

## 7. Authentication and Security

- **Must Have:**

- The system must use role-based access control, ensuring that users only have access to features based on their role (Admin, Office Staff, Driver, Customer).
- The system must encrypt sensitive data, including customer information and digital signatures.
- **Should Have:**
  - The system should log all user actions for auditing and security purposes.
- **Could Have:**
  - The system could implement two-factor authentication for higher security, especially for admin and office staff roles.

## 8. Notifications

- **Must Have:**
  - The system must notify office staff and customers when a booking is updated or completed.
  - The system must notify drivers of new bookings or changes in assigned containers.
- **Should Have:**
  - The system should allow users to configure their notification preferences (e.g., email, SMS).
- **Could Have:**
  - The system could send reminders for upcoming deliveries or follow-ups for incomplete bookings.

## 1. User Roles and Access Control

- **Admin:**
  - Can access all system features.
  - Manage user roles and permissions.
- **Office Staff:**
  - Can view, add, and edit customer information.
  - Can create, assign, and manage booking numbers.

- Assign containers to booking numbers.
  - Access the dashboard.
- **Driver:**
  - Can view assigned containers/booking numbers.
  - Update container status (received, delivered).
  - Capture recipient's name and digital signature.
- **Customer:**
  - Can view the dashboard to track their own bookings only.

## **2. Dashboard**

- **Admin/Office Staff:**
  - View summary reports of all customers, bookings, and container statuses.
  - Display statistics (e.g., total deliveries, delayed containers).
- **Customer:**
  - View the status of their booking, including container tracking.
- **Driver:**
  - Summary of current assigned bookings and their status updates.

## **3. Customer List**

- **Office Staff:**
  - Add new customers to the system (name, contact details, company details).
  - View, search, edit, or remove customers from the list.
- **Admin:**
  - Full access to view and manage the customer list.

## **4. Booking Management**

- **Office Staff:**
  - Create new booking numbers and assign customers to bookings.
  - Assign containers to a booking.
  - Manage booking details (e.g., origin, destination, estimated delivery time).
  - Update booking status (e.g., pending, in transit, delivered).
- **Admin:**
  - Full access to create, view, and edit all bookings.

## **5. Container Management**

- **Office Staff:**
  - Assign containers to a specific booking number.
  - View container details (e.g., size, weight, contents).
- **Driver:**
  - Update the status of assigned containers (e.g., received, delivered).
  - Enter the recipient's name upon delivery.

- Capture the digital signature of the recipient.

## **6. Tracking System**

- Customer:
  - View real-time tracking of their booked containers via the dashboard.
- Admin/Office Staff:
  - Track all containers and see status updates in real time.
- Driver:
  - View status and update progress on assigned containers.

## **7. Notifications**

- Notify customers via email/SMS when their container has been received or delivered.
- Office staff receive notifications when booking or container status changes.
- Drivers receive notifications for assigned bookings and delivery confirmations.

## **8. Authentication and Security**

- Role-based access control for different features.
- Each user (admin, office staff, driver, customer) must authenticate using credentials.
- Encryption of sensitive data like digital signatures and personal information.

FreightDash is a comprehensive trucking logistics management system designed to streamline the process of container booking, tracking, and delivery. It features user role-based access for Admin, Office Staff, Drivers, and Customers. Each user has distinct responsibilities and permissions within the system, ensuring efficient management and tracking of containers throughout the transportation lifecycle.

# **1. USER ROLES AND ACCESS CONTROL**

## **1.1 Admin**

- **Access Level:** Full system access.
- **Responsibilities:**
  - Manage system settings, users, and permissions.

- Oversee customer and booking data.
- Access all features, including dashboard, customer list, booking, and container management.
- Review reports and system logs for performance and security audits.

## 1.2 Office Staff

- **Access Level:** Restricted to customer list, booking management, and dashboard.
- **Responsibilities:**
  - **Customer Management:**
    - Add new customers (capture essential information such as name, contact, and company details).
    - Edit, update, or remove existing customer details as needed.
  - **Booking Management:**
    - Create and assign a unique booking number for customers.
    - Assign containers to a specific booking number, linking them to a customer.
    - Update booking details like origin, destination, and expected delivery date.
  - **Container Assignment:**
    - Assign multiple containers to a booking, and monitor their status.
  - **Access to Dashboard:**
    - View overall statistics and progress, such as the number of pending, in-transit, or delivered containers.
    - Get notified about any delivery delays, updates, or discrepancies in booking.

## 1.3 Driver

- **Access Level:** Restricted to assigned booking and container status updates.
- **Responsibilities:**
  - **Booking Assignment:**
    - View assigned bookings and container details.
    - Get notified about assigned bookings via the system (e.g., notification panel or push notifications).
  - **Status Update:**
    - Update the real-time status of containers, indicating when a container has been picked up, is in transit, or has been delivered.
  - **Recipient Management:**
    - Capture the recipient's name and confirm the delivery by obtaining a digital signature upon successful delivery.
  - **Tracking of Personal Assignments:**
    - Track assigned bookings and containers, seeing their current status and updates.

## 1.4 Customer

- **Access Level:** Dashboard access for tracking their personal bookings only.
- **Responsibilities:**
  - **Booking Status:**
    - Monitor the real-time status of their containers, including updates such as "in transit" or "delivered."
  - **Dashboard:**
    - View a summary of their current and past bookings, container details, and expected delivery timelines.
  - **Notifications:**
    - Receive alerts and updates on the status of their bookings, particularly for key events (e.g., when a container is delivered).

## 2. SYSTEM FEATURES

### 2.1 Dashboard

- **Admin/Office Staff:**
  - View system-wide statistics, including:
    - Total bookings created.
    - Number of containers in various states (pending, in transit, delivered).
    - Number of customers served and ongoing transactions.
    - Alerts for any booking or container delays or issues.
- **Customer:**
  - Personal dashboard displaying:
    - Real-time status of their containers, estimated delivery times, and any exceptions or delays.
    - A summary of all past and current bookings with delivery statuses.
- **Driver:**
  - View a dashboard that lists:
    - Assigned containers and bookings.
    - Their respective statuses and any necessary actions (e.g., update container status to "delivered").

### 2.2 Customer List

- **Office Staff/ Admin:**
  - Add new customers:
    - Capture necessary data like name, address, contact information, company details, etc.
  - View and manage the customer database:
    - Search, edit, and update customer details.
  - Remove or deactivate customers when necessary.
- **Admin:**



- Full access to customer information, with permission to modify records or view historical data.

## 2.3 Booking Management

- **Office Staff:**
  - Create a new booking:
    - Assign a unique booking number for every customer.
    - Input relevant details such as origin, destination, shipping date, and expected delivery time.
  - Assign containers to the booking:
    - Link containers to each booking number based on the customer's needs.
  - **Booking Status Updates:**
    - Office staff can update the status of bookings (e.g., "created," "pending," "in transit," "delivered").
    - Track and manage all active and completed bookings.
- **Admin:**
  - Full booking management, including oversight of all transactions.

## 2.4 Container Management

- **Office Staff:**
  - Assign containers to a booking:
    - Assign multiple containers to a single booking number.
    - Record details such as container size, weight, contents, and other metadata.
  - **Admin:**
    - Full container management, including oversight of all containers in the system.
- **Driver:**
  - View assigned containers linked to bookings:
    - Update the container's status (e.g., "picked up," "in transit," "delivered").
    - Record the delivery details, including recipient name and digital signature.

## 2.5 Container Status Updates

- **Driver:**
  - Update the system with the current status of the containers.
  - Capture and input the recipient's name and digital signature at the time of delivery.
- **Customer/Office Staff:**
  - View real-time status updates of containers, including any changes in the delivery timeline.
- **Admin:**
  - Monitor all container updates and ensure status accuracy.

### 3. TRACKING AND NOTIFICATION SYSTEM

#### 3.1 Real-Time Tracking

- **Customer:**
  - Track their containers via the dashboard, showing real-time location and status updates.
- **Office Staff:**
  - Track all customer containers, monitor their progress, and address any delays or issues.
- **Driver:**
  - Track only assigned containers and update statuses accordingly.

#### 3.2 Notifications

- **Customer:**
  - Receive email/SMS notifications when their container reaches key milestones (e.g., "picked up," "delivered").
- **Office Staff:**
  - Receive notifications about changes in booking or container statuses.
- **Driver:**
  - Receive notifications about assigned bookings and required status updates.

### 4. AUTHENTICATION AND SECURITY

- **Role-Based Access Control:**
  - Each user (Admin, Office Staff, Driver, Customer) must log in using secure credentials.
  - System enforces access restrictions based on user roles.
- **Data Encryption:**
  - Sensitive information, including personal data, digital signatures, and customer details, is encrypted.
- **Audit Logs:**
  - All user activities (such as status updates, bookings created, or customer changes) are recorded for auditing and security purposes.

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About This Document: **THE FOLLOWING TWO PAGES ARE NOT TO BE INCLUDED IN DOCUMENT**

This document is the accepted template for the Ministry of Forest & Range (MFR) Business Requirements Document (BRD) which is part of the Systems Development Life Cycle (SDLC) framework Analysis phase. The document output represents 'best practices' for Business Analysis within the Information Management Branch (IMB).

All parties engaged to perform business analysis and BRD deliverables for MFR information systems development are instructed to follow and conform to the standards outlined in this document. This fact must be specified in the RFP and contract particulars.

**BRD Definition:**

The Business Requirements Document is an approved requirements document that describes all facets of regulatory, business, user, functional, non-functional and transitory requirements. It provides insight into both the 'as-is' and 'to-be' states of the business area. The BRD is written for a user audience, describing user needs and the impact of the anticipated changes on the user community. The structured set of prioritised and validated requirements must be user approved and maintained in order to meet the core business needs. Requirements are commonly modelled using techniques such as business, process, data and workflow models. The BRD represents the 'what' for proposed business requirements for implementation and becomes the performance baseline of the sponsoring program. The performance of the solution post implementation will be measured against the signed off business requirements to determine the value delivered and to identify opportunities for improvement.

**Green** text enclosed in angle brackets <> are information comments that would not be included in an actual BRD. **Black** text comments enclosed in angle brackets <> may be included in an actual BRD.

**SDLC and BRD Right-sizing**

[ ] Simple      [ ] Intermediate      [ ] Complex

The BRD deliverable will require synchronising with the SDLC project right sizing calculator. Projects that have greater or lesser complexity will need to adjust business analysis content accordingly. The BRD Table of Contents reflects the current base content for all projects and there could be some systems/applications where some sections may not apply. However each section must be included in the requirements document and in these cases, the document must contain an appropriate statement indicating that this section does not apply. Other pertinent BA content not listed in the table of contents can be included at the discretion of the writer.

Future BRD review could indicate refinement to mandatory or optional statements for simple, intermediate or complex projects.

**Different Types of Requirements:**

As defined from the Business Analysis Body of Knowledge- BABOK v2.0

1. **Business Requirements** – place the business at the centre of focus, and tie the project to documented regulatory, strategic, tactical and operational goals through Enterprise Analysis. Customer requirements are covered at a high level in this section, then in detail under User Requirements.
2. **User Requirements** – place the user at the centre of focus, and describe the "to be" user experience with the new system, using Flowcharts, Use Case Diagrams, Use Case Scenarios, Line of Vision and other process models. In some cases, especially where business processes are being modified, it may also be necessary to document the “as is” state of user experience with the current system.
3. **Functional Requirements** – place the proposed system at the centre of focus, and provide a prioritized list of capabilities the system must demonstrate in order to satisfy business and user requirements.
4. **Non-Functional Requirements** – refer to needs that must be fulfilled in relation to things like the user interface, access security, availability, robustness, system failure, integration, migration and documentation. As such, they do not deal with the actual functionality of the system, but represent key project success factors nevertheless.
5. **Transition Requirements**- temporary capabilities that the solution must have in order to facilitate transition from the current enterprise state to the desired future state, but will not be needed once the transition is completed. Both old and new systems may run in parallel. They are not defined until a solution has been designed.

Other related standards can be found on the Information Management Branch standards web page <https://extranet.for.gov.bc.ca/AppDev/Guides>>

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## 1. DOCUMENT REVISION LOG

*<Suggested numbering convention:*

*0 to 0.9 are for pre-Peer Review drafts; 1.0 is for an approved document from the Peer Review (review can be from either MFR or Vendor community)*

*1.0 – 1.9 is for the IT oversight; 2.0 is for an IT Oversight approved document*

*2.1 – 2.9 is for Client reviews; 3.0 is for a Client-approved document*

*3.1 – 3.9 is an IMB approved document.*

*A BRD with a version number of 4.0 has been thoroughly reviewed and is ready for a Statement of Work and/or Design Specification.>*

**Table 1 Document Revision Log**

Date	Author	Version	Reason for Change

## 2. DOCUMENT REVIEWERS

*<The Document Reviewers provide comment and validate the structure and content of the document for the purpose ensuring that key points of contact for the initiative have input or review. The review may not necessarily be specific to the detail but may view from context or presentation perspectives.>*

**Table 2 Document Reviewers**

Name & Title	Role	Approval Date	Version

## 3. APPROVER & SIGNOFF

*<In some cases, projects will have a number of key stakeholders who must discuss and provide interim approval for all, or specific sections of the BRD. However, there must always be at least one Client Acceptor who will ultimately approve the document, representing the requirements viewpoint of the business area addressed by the project.*

*Within project management and business analysis, the identification of the Client Acceptor is the key delegation. The delegation of Client Acceptor may be awarded to the same individual who serves as Business Area Project Sponsor.>*

**Table 3 Client Acceptor (Project Sponsor)**

Name & Title	Role	Approval Date	Version
Signature:			

## 4. INTRODUCTION (Analysis Description)

### 4.1 DOCUMENT PURPOSE

*<This section describes the reasons and purpose of the BRD.>*

<The purpose of the Business Requirements Document (BRD) is to present the stakeholder requirements needs for <an application> completely, accurately and unambiguously in a technology-independent manner. This information is captured and written by the Business Analysis team during the project Analysis phase. Business language is used to describe the requirements authored in this document and is the definitive specification of the user requirements. The BRD is the primary input to the design and development phases, and is the primary specification for User Acceptance. This document is intended to be read by all responsible for the management of the project development initiative including business users, user representatives and sponsors, and other interested parties.>

### 4.2 DOCUMENT SCOPE

*<This section describes the scope of the BRD.>*

<As determined during the Analysis phase of the project, the scope of this document is limited to describing the <Project> stakeholder business needs including stakeholder categories (*who*, e.g. primary and secondary users), the business data relationship map (*what*, e.g. data model), the event-response table (*when*, e.g. state diagrams), business policies (*why*, e.g. business rules), and the process map (*how*, e.g. use cases). The approved and signed version of this document will serve as the basis for subsequent phases of the project.

This document intends to define and describe the:

- Business requirements,
- User requirements,
- Use cases that support the business processes,
- User profiles and locations,
- Business processes and rules,
- Functional requirements,
- Non-functional requirements,
- Data requirements,

- Requirements baseline and traceability,
- Future considerations,

This document does not include:

- Technical and design specifications – these will be provided in the next phase of the project as part of the system design documentation
- Descriptions of functionality, interfaces or requirements of processes outside of the business area
- Detailed analysis of requirements related to other applications, and
- Out of scope requirements>

#### 4.3 DOCUMENT AUDIENCE

**Table 4 Document Audience**

Document Audience	Location

*<The main intended audience for this document are the business owners of the proposed system or other change initiative. They must be able to verify that their business requirements have been documented completely, accurately and unambiguously. Data Architects, Application Architects and Technical Architects would also find the information in this document useful for designing a solution that will address these business requirements. Since the requirements are documented here in technology-independent manner, the end-users of the system should be able to comprehend the requirements fairly easily from this document.>*

#### 4.4 BUSINESS ANALYSIS APPROACH

*<This section describes the output from tasks and activities that was used to perform business analysis for this project. This may include, but is not limited to, conceptual requirements and input from the SDLC Planning phase, consultation preparation, working group meetings, decision request documents, interviews, JAD sessions, surveys and questionnaires.>*

< The objective of the Analysis phase of the project was to document the list of requirements of interest to the business and to provide supporting documentation for the solution in sufficient detail for next phase work. The Analysis phase included <both a review of existing information and> identification of new or modified requirements.

The approach included:

- Business analysis planning and monitoring
- Elicitation
- Requirements management and communication
- Requirements analysis
- Solution assessment and validation

The inputs to this phase included:

- Business Case
- Master Project Plan
- Project Charter
- Business Analysis Work Plan

#### 4.5 REQUIREMENTS QUALITY ASSURANCE

*<Quality assurance for requirements planning and management focuses on ensuring that the processes and activities will deliver outputs that meet an appropriate level of quality. The processes and activities may include techniques such as BRD peer review, contractor status reporting and metrics, requirements change management process, requirements completeness checklist, client participation in requirements acceptance and signoff, and vendor project quality assurance plans. State if structured walkthrough of finalized set of requirements will be conducted for ensuring the quality of the requirements.>*

*<There are a number of levels at which this document should be reviewed including;*

- *Business Case Synchronicity Check (the Sponsor has identified the means for validating the project success)*
- *Requirements Document Check (the document is worth reading at the business context level)*
- *Requirements Statements Content Check (the individual and related requirement statements are unambiguous, clear, valid and traceable)>*

#### 4.6 INFORMATION REFERENCES

*<This section should provide a complete list of all the applicable and reference documents, identified by title, author, date and version. Alternatively, the list of documents may be put into an appendix. However, even in that case, a clear indication of the existence of applicable documents, and a pointer to where the list of them may be found, must as a*

*minimum be included in the section. e.g., Business Case, Master Project Plan, PIA, RIA, STRA. >*

**Table 5 Information References**

Document Name	Author	Date	Version

#### 4.7 DEFINITIONS, ABBREVIATIONS & ACRONYMS

*<This section should provide the definitions of all terms, acronyms, and abbreviations, or refer to other documents where the definitions can be found.>*

<The following terms, acronyms, and abbreviations are used throughout this document.>

**Table 6 Terms, Acronyms & Abbreviations**

Name	Definition

## 5. BUSINESS REQUIREMENTS (Opportunity)

### 5.1 PROJECT BACKGROUND

*<Provide a short description of the proposed solution being specified and its purpose in relation to the recommendation of corporate goals or business strategies. At the high-level articulate the “as is” in terms of what the Customer has now (business functions, processes, and infrastructure). State why the current situation needs improvement, then articulate what the Customer expects to be able to do in the “to be” state.>*

### 5.2 SCOPE STATEMENT

#### 5.2.1 IN SCOPE

*<Use the In Scope section to describe at a high-level “what the customer expects this project to deliver”.>*

#### 5.2.2 OUT OF SCOPE

*<Is there anything that has been discussed as a possible activity of the project that needs to be identified as explicitly out of scope? If nothing is identified as out of scope, will everyone’s expectations be met?>*

### 5.3 BUSINESS REQUIREMENTS PURPOSE

*<This section describes the purpose of the Business Requirements Document. Tick one or more of the appropriate check boxes and describe the purpose of the Business requirements briefly underneath.>*

- ☐ Major enhancements to an existing system
- ☐ New application development
- ☐ Replacement application development
- ☐ Maintenance to an existing system
- ☐ Policy and legislation changes
- ☐ Health and safety

### 5.4 BUSINESS CONTEXT DIAGRAM

*<Describe the system context that defines the relationships of this system with users and external systems. The system context draws the boundary that distinguishes what's in*

*the system and what's outside of it. The context also represents the relationships between the system and the external entities with which the system interacts.*

*If many user roles and external systems exist, simplify with abstractions. The detailed requirements for the relationships of the system with the external world are better expressed in the User Requirements than in the Business Requirements section.>*

#### **5.4.1 "As Is" – CURRENT STATE**

- *<'As Is' State: Provide a high level business context description of the current business state.>*

#### **5.4.2 "To Be" – FUTURE STATE**

- *<'As Is' State: Provide a high level business context description of the current business state.>*

### **Appendix A: Business Context Diagram(s)**

<INSERT DIAGRAM HERE>



## 5.5 BUSINESS OBJECTIVES & BENEFITS SUMMARY

< This section describes the primary business objectives and benefits to be achieved with the implementation of the Business Requirements as prescribed in the Business Case. Describe at a strategic enterprise level “what the client expects this product to provide” and “what the client agrees to defer”.>

## 5.6 BUSINESS DRIVERS/ISSUES

<Define the critical business factors that are to be addressed or satisfied by this system. Consider any business issues that may impact or impede the success of the system.>

## 5.7 DEPENDENCIES

<This section lists the dependencies between and within the system for which these requirements are written and the subsequent project phases or other systems. Describe which factors may influence the quality and the success of the product, such as the availability of an external component in a certain date. Dependencies are a form of constraint in that they can influence the timing, content, risk, etc. for a project. If there are none, delete the table and add the text,

<There are no project requests active projects related to this BRD.>

<The following projects are related to this project request.>

**Table 7 Dependencies**

ID	Project/System Name	Active? (Y/N)	Nature of Dependency

## 5.8 ASSUMPTIONS

<This section lists the assumptions for which these requirements are written and the subsequent project phases. If the limitation is due to a business rule or an IT policy, identify the rule or policy in simple terms or provide a reference. List any assumed factors (as opposed to known facts) that could affect the requirements stated in the BRD. These could include third-party or commercial components, development or operating environment issues, or constraints. The project could be affected if these assumptions are incorrect, are not shared, or changed.>

<The following are assumptions that the project depends on but which are beyond the control of the project team. These assumptions will be managed as risks in the project plan.>

**Table 8 Assumptions**

ID	Assumptions

**5.9 CONSTRAINTS/RESTRICTIONS**

*< This section lists the constraints and restrictions for which these requirements are written and the subsequent project phases. They often impact and/or provide direction on how the system must ultimately be developed. Use the following table to detail and uniquely identify any conditions that restrict the requirements and/or technology to specifying a system.>*

**Table 9 Constraints/Restrictions**

ID	Constraints/Restrictions

**5.10 BUSINESS TRANSACTION VOLUMES**

*<Define the expected volumes associated with the input and output requirements showing different types of data as well as the internal storage and processing volumes. Define the nature of processing (timing), and the volume (size) of transactions that typically are processed per 'cycle.' Are transactions processed on a monthly cycle, such as preparing a billing statement? Other transactions are processed the same day they are entered into the system, such as items received in an inventory system or a customer payment received in a billing system. Still other transactions are entered into the system and held for processing on a particular date or awaiting an event trigger.>*

**5.11 REGULATORY CONSIDERATIONS**

**5.11.1 EXTERNAL REGULATIONS**

*<Describe external regulations governing the sponsoring organization that will or may impact the project, timeline and deliverables.>*

**5.11.2 INTERNAL REGULATIONS**

*<Describe internal regulations governing the sponsoring organization that will or may impact the project, timeline and deliverables.>*

5.12 *PRIVACY IMPACT ASSESSMENT – Refer to Completed PIA*

5.13 *RECORDS IMPACT ASSESSMENT – Refer to completed RIA*

5.14 *OPEN ISSUES*

*<Use this section to track unresolved issues needing to be resolved for requirements to be complete. Maintain this list during the development of this document. In the description of the issue, include an assessment of the complexity of the issue and its potential impact if not resolved e.g. standing issues for next stage. >*

**Table 10 Open Issues**

<b>I D</b>	<b>Issue/Priority/Impact</b>	<b>Target Resolution Date</b>	<b>Responsibility</b>

## 6. USER REQUIREMENTS (Needs)

### 6.1 USE CASE OVERVIEW

*<Where a business process already exists, provide high-level business use cases that describe what the users are expecting. These use cases will provide the basis for planning user acceptance testing. If a new business process will be created ensure to map out the new business process so that there will be a basis for user acceptance testing and requirements traceability. Use Cases are used in system analysis to identify, clarify, and organize system requirements, and consists of a set of possible sequences of interactions between systems and users in a particular environment and related to a particular goal through primary and alternate flows.>*

#### Appendix B Use Case

<b>Use Case Number</b>	<i>&lt;the number assigned to the Use Case&gt;</i>
<b>Name</b>	<i>&lt;goal or event described by verb and noun&gt;</i>
<b>Description</b>	<i>&lt;brief description of the business activity accomplished by this use case&gt;</i>
<b>Actor(s)</b>	<i>&lt;who performs this activity?&gt;</i>
<b>Pre-conditions</b>	<i>&lt;this case processes the following inputs...&gt;</i>
<b>Flow of Events</b>	<i>&lt;Standard path, Alternate path, Exception path&gt;</i>
<b>Post-conditions</b>	<i>&lt;this case generated the following post conditions ...&gt;</i>
<b>Exit Criteria</b>	<i>&lt;this case is complete when...&gt;</i>
<b>User Requirement #</b>	<i>&lt;identify user requirement number associated to this case&gt;</i>
<b>Notes &amp; Issues</b>	<i>&lt;identify user requirement number associated to this case&gt;</i>

## 6.2 BUSINESS PROCESS MODEL

*<A business process model diagram should be created in each of the following cases: for each function one level above the elementary function level; and where more than one system process is used to implement the elementary function level, one process model diagram should be created for each elementary business function.*

*In the former case, the diagram will include a number of elementary business functions, and the business event(s) and outcome(s) associated with each. The diagram should be given the same name as the higher level function on which it is based. In the latter case, each diagram will show all of the system processes used to implement the elementary business function being depicted, the system trigger(s) used to implement the business event(s), the outcome(s) of the elementary business function, and the flow lines that indicate the processing order.>*

### 6.2.1 “As Is” – CURRENT STATE

- *<‘As Is’ State: Provide a high level description of the business area in terms of the business functions being accomplished. Also identify the systems being used to address the business functions.>*

### 6.2.2 “To Be” – FUTURE STATE

- *<‘To Be’ State: Summarize the findings from the review of the systems. Identify any redundancies on process or data, data sinks (data coming in not being used by any other processes) and data gaps (data being used but not coming in from another source). If this review covers multiple business areas or sub-systems, you may want to create a general findings section and a Program Area specific section to ensure all topics are covered.>*

## Appendix C Business Process Model Diagram

INSERT DIAGRAM HERE

### 6.3 ACTOR PROFILES & LOCATIONS

*<Identify the various user classes that you anticipate will use this product e.g. Sponsor, Primary User, Secondary User. User classes may be differentiated based on frequency of use, subset of business functions performed, technical expertise, security or privilege levels, educational level, or experience. Describe the pertinent characteristics of each user class. Certain requirements may pertain only to certain user classes.>*

**Table 11 Actor Profiles & Locations**

Organizational Job Function	Nature of the Interaction	Organizational Relationship	Job Title

### 6.4 INPUTS

*< Describe the input media at a conceptual context that can be used by the operator for providing information to the system. Where appropriate provide the layout of all input data screens or graphical user interfaces (GUIs) (for example updates to existing screens, prototype etc.). Provide a graphic representation of each interface.*

*This section should contain a list of the data entities. Specific values, range of values, mandatory/optional, alphanumeric values, and length are defined and identified in the Data Requirements Section 6.*

*Where applicable discuss the miscellaneous messages associated with operator inputs, including the following:*

- *Copies of form(s) if the input data are keyed or scanned for data entry from printed forms*
- *Description of any access restrictions or security considerations*
- *Each transaction name, code, and definition, if the system is a transaction-based processing system.>*

### 6.5 OUTPUTS

*<This section describes of the system output requirement relative to the user/operator; show a mapping to the high-level data flows. System outputs include reports, data display screens and GUIs, query results, etc. The output files are described in Section 3 and may be referenced in this section. The following should be provided, if appropriate:*

- *Description of the purpose of the output, including identification of the primary users*

- *Description of the output which may be represented by report and screen contents (provide a graphic representation of each layout and define all data elements associated with the layout or reference the data dictionary)*
- *Report distribution requirements, if any (include frequency for periodic reports)*
- *Description of any access restrictions or security considerations>*

## 6.6 USER INTERFACE

*<Describe the logical characteristics of each interface between the software product and the users. This may include sample screen images, any GUI standards or product family style guides that are to be followed, screen layout constraints, standard buttons and functions (e.g., help) that will appear on every screen, keyboard shortcuts, error message display standards, and so on. Define the software components for which a user interface is needed. Details of the user interface design should be documented in a separate user interface specification.>*

## 6.7 TRIGGERS

*<Define the relationships between the functions and the business processes that drive or initiate the function(s) e.g. dates, event, state change.>*

## 6.8 BUSINESS RULES

*<A business rule describes a standard business practice that constrains the design of the solution. Business rules define acceptable corporate behaviour in response to business events. They grant authority to act while imposing limits and conditions on how users interact within their business environment. From an information system perspective, the rules define which processes, data, constraints and performance criteria are acceptable. Properly expressed, they are a set of formal business requirements. OPERATIVE RULES= policy/legislation (e.g. an authorized permit must be in place); STRUCTURAL RULES=true or not true (e.g. every employee must have a 3 digit employee number. An example is:)>*

**Table 12 Business Rules**

Rule ID #	Rule Type	Statement	Source/ Date	Priority	Linked Requirement #	Use Case Source	Test Case Source

## 6.9 FUNCTION HIERARCHY DIAGRAM & REPORT

*<If Use Cases are not supplied then include the Function Hierarchy Diagram & Report. The business should be represented on as few diagrams as possible that will meet the objective of clear communication. If the entire function model can be shown on a single page without becoming either illegible or too complex, then only one page should be used.*

*A function definition report should be generated to correspond to each function hierarchy diagram. If no properties have been captured for higher level functions, then the report should include only elementary business functions presented in alphabetic order by function label>.*

### **Appendix D Function Hierarchy Diagram**

INSERT DIAGRAM HERE



#### 6.10 DATA FLOW DIAGRAM

*<As distinct from the business process model, defines the understanding of the range of data for the information input, processed, stored, and output between functions. Define the method of ensuring that the function process is adhered to within the system.>*

#### **Appendix E Data Flow Diagram**

INSERT DIAGRAM HERE

## 7. FUNCTIONAL REQUIREMENTS (Product Capabilities & Behaviour)

### 7.1 OPERATIONAL ENVIRONMENT

*<This section describes what the system must be developed to, to conform to Ministry standards in effect at the time of development with respect to:*

- *corporate data modelling and administration;*
- *corporate database technology; and*
- *application development environment>*

### 7.2 SYSTEM INTERFACE

*<This section describes interfaces with other solutions, processes that this business process must interact with e.g.*

- *data source from Geo database*
- *data replicated to LRDW*
- *XML*
- *ESF*
- *Handhelds.>*

### 7.3 COMMUNICATIONS INTERFACE

*<Describe the requirements associated with any communications functions required by this system including*

- *e-mail,*
- *web browser,*
- *network server communications protocols, b*
- *electronic forms,*

*Define any pertinent message formatting. Identify any communication standards that will be used, such as FTP or HTTP. Specify any communication security or encryption issues, data transfer rates, and synchronization mechanisms.>*

### 7.4 SOFTWARE INTERFACE

*<Describe the connections between this system and other specific software components (name and version), including databases, operating systems, tools, libraries, and integrated commercial components. Identify the data items or messages coming into the system and going out and describe the purpose of each. Describe the services needed and the nature of communications. Refer to documents that describe detailed application programming interface protocols. Identify data that will be shared across software components. If the data sharing mechanism must be implemented in a specific way (for example, use of a global data area in a multitasking operating system), specify this as an implementation constraint.>*

### 7.5 HARDWARE INTERFACE

*<Describe the logical and physical characteristics of each interface between the software product and the hardware components of the system. This may include the supported device types, the nature of the data and control interactions between the software and the hardware, and communication protocols to be used.>*

## 7.6 FUNCTION/USER SECURITY MATRIX

<Define the relationship between each user group (actor) both internal and external, and the functions (or use case) as described in the functional hierarchy or use case descriptions.>

These matrixes are important in the phase of your analysis when both the business function model and entity relationship model seem consistent internally. You can use a CRUD matrix to answer the following questions:

- Do the business functions require the entities that are missing?
- Are there entities that are not used by any of the functions?

<The following symbols represent the level of access by each of the user groups:>

<b>C</b>	Create
<b>R</b>	Read
<b>U</b>	Update
<b>D</b>	Delete

**Table 13 Function/User Security Matrix**

<b>Actor:</b>							
<b>Function (or Use Case):</b>							

7.7 USER GROUP & SYSTEM ACCESS SUMMARY

<Define any special user access security that relates to entities within the data. >

**Table 14 User Group & System Access Summary**

User Group	System Access

## 8. NON-FUNCTIONAL REQUIREMENTS (Success Factors)

### 8.1 RESPONSE/ PERFORMANCE

*< State the performance requirements for functions or features given the proposed resources and explain their rationale to enable suitable design choices including*

- *speed*
- *precision>*

### 8.2 CAPACITY

*<State the expected averages and levels of system growth for*

- *volumes of transaction,*
- *users, and*
- *peak times usage>*

### 8.3 RELIABILITY

*<State the reliability requirements for the system including ability to recover from*

- *errors, and*
- *failures in the interfaces>*

### 8.4 OPERABILITY

*<State the operability requirements including*

- *the ease of learning the application*
- *error handling & messaging*

### 8.5 MAINTAINABILITY

*<State the maintainability requirements for the application post implementation including*

- *the ability to implement changes without causing unexpected failures*
- *the ease of making changes*
- *the ability to make changes to components without affecting others*

### 8.6 SCALABILITY

*<State the expected scalability for*

- *users,*
- *uptake,*
- *storage,*
- *infrastructure support,*
- *modules,*
- *licensing needs>*

## 8.7 AVAILABILITY

*<State the availability requirements for the system including*

- *time of day, days of year*
- *what loss of availability during those times is tolerable*
- *how will the users learn of non-availability*
- *fallback facilities needed in the event of non availability*
- *special provision needed for bringing the system back into safe, productive operation after a period of non availability>*

## 8.8 DELIVERY

*<State the core types of deliverable components expected for each application release including*

- *executable software*
- *source code*
- *build scripts*
- *development tools*
- *documentation>*

## 8.9 RECOVERY

*<Define specific and critical requirements for system planning that need to be considered during the detailed technical design stage of the system. What are the needs for timing of backups? >*

## 8.10 TRANSITION REQUIREMENTS

*<Identify any transition requirements for the system solution or user skill set needed to operate the system.>*

## 9. DATA REQUIREMENTS (Structure)

### 9.1 LOGICAL DATA MODEL

*<Details are covered in the Data Administration standards. Please refer to these documents in conjunction with this analysis standard when preparing system requirements. Specify any special requirements for accessing other systems data. Show validation requirements and edit rules. Include the following components. Additional information can be found at: <http://www.for.gov.bc.ca/his/datadmin/s7.pdf>>*

### Appendix F Logical Data Model

- Entity Relationship Diagram- include diagram or reference to diagram
  - Include relationship descriptions
- Entity & definitions- include or reference
- Entity Attributes and Definitions- include reference
- Code Lists

### 9.2 DATA CONVERSION REQUIREMENTS

*<This section describes the high-level Data Conversion Requirements which identifies and defines the source data (data sets) which must be converted into the new database tables (or existing tables) as a result of this project. It will show the list of major entity (source) to entity (target) mappings. (More details e.g. column mappings, will be added in the design phase.)>*

### 9.3 WAREHOUSING

*<This section defines the high level warehousing requirements for the project. The data warehousing is to be treated as a separate “system” in parallel to the main business system. There are separate and different requirements for data, processing and reporting associated with the data warehouse.>*

### 9.4 DATA VOLUMES & SIZE

*<This section describes the expected approximate Data volumes (initial volume and annual growth percentage for each conceptual Entity.>*

### 9.5 DATA RETENTION/ARCHIVE/PURGE

*<This section describes the Data retention (time frames for online Data retention before archiving) and also the archiving requirements. Refer to records management policy.>*

## 10. ALL REQUIREMENTS LIST/TRACEABILITY MATRIX (Requirements Baseline)

*<This section shall be divided into statements to specify the requirements, that is, those characteristics of the requirements that are conditions for its acceptance. Each requirement shall be assigned a project-unique identifier to support testing and traceability, and shall be stated in such a way that an objective test can be defined for it. The final product must be tested and validated against the design and original requirements. A "strong" requirement is tightly, unambiguously, and precisely defined in such a way that leaves no other interpretation or meaning to any individual requirement.*

*Requirements tracing is the process of documenting the links between the user requirements for the system and the work products developed to implement and verify those requirements in a bi-directional manner e.g. source of requirements, requirements and work products that implement the requirement. These work products include software requirements, design specifications, software code, test plans and other artifacts of the systems development process. Requirements tracing helps the project team to understand which parts of the design and code implement the user's requirements, and which tests are necessary to verify that the user's requirements have been implemented correctly.*

*The format for requirement presentation can be as follows:*

- **Requirement Identification Number**

*<Provide an identification number for the requirement.>*

- **Requirement Type**

*<Provide a definition of the requirement type.>*

- **Statement**

*<Provide a definitive statement of the business condition or capability in clear, consistent and unambiguous language. Avoid specifying the design.>*

- **Source/Date**

*<The source of and date of the requirements statement.>*

- **Priority**



*<Use “Priority” to sort the requirements so that the most important are distinguished from the rest. The choices are Mandatory, Value Added, Optional, and Excluded.>*

- *Business Rule Number*

*< State the business rule that is related to this requirement.>*

- *Backward Traceability*

*<Show the origin of an item. This can be used to determine if unnecessary items are being created (gold plating) that are not warranted by the requirements or to discover the reason for an item. Tie back to hi-level business requirements statement.>*

- *Use Case Source*

*<State the detail use case that is related to this requirement.>*

- *Test Case Source*

*<State the high level test case that is related to this requirement.>*

#### **Appendix G All Requirements List & Traceability Matrix**

<b>ID #</b>	
<b>Requirement Type</b>	
<b>Statement</b>	
<b>Source/Date</b>	
<b>Priority</b>	
<b>Business Rule #</b>	
<b>Backward</b>	
<b>Use Case Source</b>	
<b>Test Case Source</b>	

## 11. CONSIDERATIONS (Planning Effort)

*<Most of these headings are covered under other SDLC phases and are optional to complete. Provide high level statements for consideration in future work.>*

### 11.1 PRELIMINARY DESIGN

*<Provide preliminary design information to enable framing of the design phase deliverables and preferred contract type. Where there is an agreement that the contractor performing the analysis phase will be proceeding with the design phase, these details should be specific and accurate.*

*If there is no agreement that the contractor performing the analysis phase will be proceeding with the design phase, these details may be more general and high level or not present.>*

### 11.2 WORK PLAN

*<Provide a high-level work plan for the design phase identifying all major milestones including the proposed delivery schedule.>*

### 11.3 RESOURCING

*<Identify the ministry branches and/or other ministries and contracted resources required and responsible for the detail planning and estimating of the design phase.>*

### 11.4 COSTS

*<Estimate the costs and preferred contract type for the design phase based on the scope definition. It is preferred that the scope be defined to such a degree so as to enable the estimates to be fixed priced.>*

### 11.5 DELIVERY REQUIREMENTS

*<Identify the business and technical units a general definition of the new solution by policies, procedures, business rules, training, manuals retooling, staffing and facilities needed.>*

### 11.6 TEST STRATEGY

*<Identify the high level test strategy that would cover off the requirements scope.>*

### 11.7 IMPLEMENTATION PLAN

*<Identify the system implementation strategy that addresses the general timing and activities required for implementation and post implementation support.>*

### 11.8 USER TRAINING

*<Identify a high level system training and support strategy that addresses productivity gains around assembly, maintenance, publishing and delivery of learning content for primary and secondary users.>*

#### **11.9 SUPPORT**

*<Identify at a high level the expected support for the system once in production.>*

#### **11.10 SYSTEM MAINTENANCE AND OPERATIONS**

*<Identify the collaborative technical and business strategy to fix problems and implement enhancements that add value to the system and ultimately the organization.>*

#### **11.11 APPLICATION DEACTIVATION**

*<Identify the future high-level business, technical and regulatory strategies that would address the deactivation of the business solution should it be replaced or retired.>*

## **12.APPENDICES (Supporting Documentation)**

Appendix A: Business Context Diagram

Appendix B: Use Case Diagram

Appendix C: Business Process Map

Appendix D: Function Hierarchy Diagram

Appendix E: Data Flow Diagram

Appendix F: Logical Data Model

Appendix G: All Requirements List & Traceability Matrix