
SYSTEM DEVELOPMENT LIFE CYCLE (SDLC) METHODOLOGY



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TABLE OF CONTENTS

Revision History.....	6
1 Introduction	7
1.1 Audience.....	7
1.2 Purpose.....	7
2 Systems configuration management (SCM)	7
2.1 Systems Configuration Management – definition	7
2.2 Definition of Terms.....	7
2.3 Process Notes/General Procedures	9
Primary SDLC Methodology Process Participant	9
3 SDLC Methodology – major/minor Software Development/Enhancements.....	9
3.1 Initiate Phase	9
3.1.1 Evaluate Request / Defect / Enhancement (<i>Program Administrator (PA)</i>)	10
3.1.2 Create Change Request (<i>Program Administrator (PA)</i>)	11
3.1.3 Review Request (<i>ISB Business Analyst (BA)</i>).....	11
3.1.4 Review Data Requirements (<i>ISB Data Administrator (DA)</i>)	12
3.1.5 Review System Requirements (<i>ISB Programmer</i>).....	13
3.1.6 Review Database Impact (<i>ISB Database Administrator (DBA)</i>)	13
3.1.7 Place change request “on hold” (<i>ISB Business Analyst (BA)</i>).....	14
3.1.8 Reject change request (<i>ISB Business Analyst (BA)</i>).....	14
3.2 System Requirements Phase	15
3.2.1 Determine Project Magnitude (<i>ISB Business Analyst (BA)</i>)	16
3.2.2 Prepare Requirements Estimate Request (<i>ISB Business Analyst (BA)</i>)	17
3.2.3 Estimate for System Requirements Development (<i>External System Developer</i>)	17
3.2.4 Estimate for System Requirements Development (<i>ISB Business Analyst (BA)</i>).....	18
3.2.5 Evaluate System Requirements Development Estimate (<i>Program Administrator (PA)</i>)	18
3.2.6 Assist with Evaluating Requirements Development Estimate (<i>ISB Business Analyst (BA)</i>)	19
3.2.7 Place Project “On Hold” (<i>ISB Business Analyst (BA)</i>)	19
3.2.8 Develop System Requirements & Estimate Design (<i>External System Developer</i>)	20
3.2.9 Develop / Review System Requirements (<i>ISB Business Analyst (BA)</i>).....	21
3.2.10 Review Data Requirements (<i>ISB Data Administrator (DA)</i>)	22
3.2.11 Estimate Data Architecture Development (<i>ISB Data Administrator (DA)</i>)	22

3.2.12	Estimate Systems Analysis / Design (<i>ISB Programmer</i>)\.....	23
3.2.13	Estimate Database Design (<i>ISB Database Administrator (DBA)</i>)	23
3.2.14	Review/Sign-off Requirements (<i>Program Administrator (PA)</i>).....	24
3.2.15	QA/Approve System Requirements (<i>ISB Business Analyst (BA)</i>)	25
3.2.16	Evaluate Analysis & Design Estimates / Development Priority (<i>Program Administrator (PA)</i>)	25
3.2.17	Assist with Evaluating Analysis & Design Estimates/Development Priority (<i>ISB Business Analyst (BA)</i>)	26
3.2.18	Place Project “On Hold” (<i>ISB Business Analyst (BA)</i>)	26
3.2.19	Approve start of System Analysis & Design (<i>ISB Business Analyst (BA)</i>)	27
3.3	System Analysis & Design Phase	27
3.3.1	Develop System Design & Data Architecture AND Estimate Development Effort (<i>External System Developer</i>).....	29
3.3.2	Review/Sign-off “User-System Interface” Design (<i>Program Administrator (PA)</i>)	31
3.3.3	Review “User-System Interface” Design (<i>ISB Business Analyst (BA)</i>)	32
3.3.4	Develop OR QA/Approve Data Architecture (<i>ISB Data Administrator (DA)</i>)	33
3.3.5	Plan / Design Data Architecture For Data Conversion (<i>ISB Data Administrator (DA)</i>) ..	34
3.3.6	Develop System Design / Estimate Development Effort OR QA/Approve System Design (<i>ISB Programmer</i>)	35
3.3.7	Develop Database Design / Estimate Development Effort OR QA/Approve Design (<i>ISB Database Administrator (DBA)</i>)	36
3.3.8	Assist With Data Conversion Planning / Design (<i>ISB Database Administrator (DBA)</i>) ..	37
3.3.9	Evaluate System Development Estimates / Development Priority (<i>Program Administrator (PA)</i>)	37
3.3.10	Assist with Evaluating System Development Estimates/ Development Priority (<i>ISB Business Analyst (BA)</i>).....	38
3.3.11	Place Project “On Hold” (<i>ISB Business Analyst (BA)</i>)	39
3.3.12	Review Project Scope/Requirements and Schedule Development (<i>Change Management Board (CMB)</i>).....	39
3.3.13	Place Project on Temporary HOLD (<i>ISB Business Analyst (BA)</i>).....	40
3.3.14	Approve start of Development (<i>ISB Business Analyst (BA)</i>).....	40
3.4	Development Phase	41
3.4.1	Develop Database / System & Unit Test Functions (<i>External System Developer</i>).....	42
3.4.2	QA User Procedures / User Acceptance Test Plan (<i>Program Administrator (PA)</i>)	44
3.4.3	QA User Procedures / User Acceptance Test Plan (<i>ISB Business Analyst (BA)</i>)	44
3.4.4	Develop / Unit Test System Functions OR QA / Approve System Unit Test (<i>ISB Programmer</i>).....	45

3.4.5	Develop & Implement Data Conversion Functions (<i>ISB Programmer</i>).....	46
3.4.6	Develop OR QA/Approve Server Model / Database (<i>ISB Database Administrator (DBA)</i>) 47	
3.4.7	Develop Temporary Data Conversion Database (<i>ISB Database Administrator (DBA)</i>) .	48
3.4.8	Perform Manual Data Conversion (Designated Program Area Personnel)	49
3.4.9	Assign Release Number (<i>ISB Release Manager</i>)	49
3.4.10	Approve start of Integration System Testing (<i>ISB Business Analyst (BA)</i>)	50
3.5	Integration System Testing (IST) Phase	50
3.5.1	Move Development Objects into ISB “Delivery Environment” (<i>External System Developer</i>).....	51
3.5.2	Perform Integrated System Test (IST) (<i>External System Developer</i>)	52
3.5.3	Validate Screens/Reports During Integration Testing (<i>Program Administrator (PA)</i>)...	52
3.5.4	Assist Designated PA(s) With Integration Testing (<i>ISB Business Analyst (BA)</i>).....	53
3.5.5	Move System Objects into ISB “Delivery Environment” (<i>ISB Programmer</i>)	53
3.5.6	Perform / QA/Approve Integrated System Test (IST) (<i>ISB Programmer</i>)	54
3.5.7	QA/Approve Integration System Testing (IST) (<i>ISB Database Administrator (DBA)</i>)	55
3.5.8	Approve Integration System Test (IST) (<i>ISB Business Analyst (BA)</i>).....	55
3.5.9	Set-up UAT System Environment (<i>ISB Programmer</i>)	56
3.5.10	Set-up UAT Oracle Environment (<i>ISB Database Administrator (DBA)</i>).....	56
3.5.11	Approve start of User Acceptance Testing (UAT) (<i>ISB Business Analyst (BA)</i>)	57
3.6	User Acceptance Testing (UAT) Phase	57
3.6.1	Conduct User Acceptance Test / Signoff System Acceptance (<i>Program Administrator (PA)</i>)	58
3.6.2	Participate In User Acceptance Test / APPROVE Production Implementation (<i>ISB Business Analyst (BA)</i>).....	58
3.6.3	Approve start of Implementation (<i>ISB BA</i>)	59
3.7	Implementation Phase	59
3.7.1	Conduct / Participate In User Training (<i>Program Administrator (PA)</i>)	60
3.7.2	Conduct / Assist With User Training / Approve Implementation (<i>ISB Business Analyst (BA)</i>)	61
3.7.3	Implement (Deploy) System (<i>ISB Programmer</i>).....	61
3.7.4	Assist With Data Conversion Into Production (<i>ISB Programmer</i>).....	62
3.7.5	Implement Database In Production (<i>ISB Database Administrator (DBA)</i>).....	62
3.7.6	Perform Data Conversion Into Production Database (<i>ISB Database Administrator (DBA)</i>)	63
3.8	Production Phase.....	63

3.8.1	Sign-off System Acceptance (Program Administrator (PA))	64
3.8.2	Conduct Post Implementation Review (<i>ISB Business Analyst (BA)</i>).....	64

REVISION HISTORY

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2017-08-10	2.0.0	Maureen Bird	Updated content to remove Harvest references; updated to new document template

1 INTRODUCTION

1.1 AUDIENCE

The intended audience for this document includes:

- Program Administrators
- ISB Managers
- Business Analysts
- Systems Configuration Management - Software Administrators
- Data Administrators
- Database Administrators
- ISB Programmers
- External System Developers
- Designated Program Area Participants

1.2 PURPOSE

The purpose of this document is to describe the System Development Life Cycle (SDLC) methodology.

NOTE: This document describes the SDLC Methodology designated as our standard at the time of update and is tool-agnostic. The document is under continued development and is subject to change.

2 SYSTEMS CONFIGURATION MANAGEMENT (SCM)

2.1 SYSTEMS CONFIGURATION MANAGEMENT – DEFINITION

Systems Configuration Management is a process for controlling the development and implementation of software tools as part of the Ministry SDLC to support Ministry business functions. It covers all activities of the systems development life cycle from identifying a need to solve a business requirement and developing a business case for the proposed solution to the implementation of the software solution.

The Methodology describes major software development/enhancements projects or minor software changes/enhancements.

2.2 DEFINITION OF TERMS

SCM Acronym/ Term	Acronym/ Term Description
BA	An acronym for the Ministry's ISB Business Analyst

SCM Acronym/ Term	Acronym/ Term Description
Change Request	<p>Requests for a new system, a system enhancement or an emergency system fix to correct a system malfunction of a system that has been in implemented into production. It also applies to system requirements that have not been stated in the System Requirements and therefore not specified in system terms in the System Design. Some examples of the latter case are:</p> <ul style="list-style-type: none"> • a hoped-for screen navigation that was not identified until the system had been developed and was in the testing state • a required report field that was not discovered until the system testing stage.
DA	An acronym for the Ministry's ISB Data Administrator
DBA	An acronym for the Ministry's ISB Database Administrator
ERD	An acronym for an Entity Relationship Diagram.
External System Developers	This term describes all of the participating team members at an external company that are on contract to develop a new system or to enhance a system. The latter could be anything from additional functionality to a minor change such as the pitch of a report heading.
IST	An acronym for Integration System Testing.
JIRA	The Ministry's issue tracking/management tool (at time of writing).
PA	An acronym for Program Administrator
Program Area	This refers to designated or all members of a Ministry Business Unit. As an example, the group responsible for Child Care Subsidy program which includes the PA for the area.
SCM	An acronym for System Configuration Management
SCM tool	The Software Configuration Management tool in current use (e.g. Microsoft Team Foundation Server (TFS).)
SDLC	An acronym for System Development Life Cycle. This is the standard System Development methodology that describes the proven techniques of developing quality-based systems. Extensions of this methodology include Information Engineering (IE) and Zachman Enterprise Framework.
SUT	An acronym for System Unit Test
System Defect or Deficiency	<p>A recorded event where a system process does not function as stated in the System Requirements and specified in system terms in the System Design. Some examples are:</p> <ul style="list-style-type: none"> ➤ the screen navigation is not according to the specifications in the System Requirements and System Design ➤ a report field does not contain the expected values as specified in the System Requirements and System Design ➤ during testing, a program crashes or a system process malfunctions. <p>In every case, the system process did not behave as defined in the System Requirements and subsequently specified in the System Design.</p>
UAT	An acronym for User Acceptance Test.

SCM Acronym/ Term	Acronym/ Term Description
User System Requirements	<p>This Industry Standard term refers to a description of a minor System Change, System Enhancement or a new System in terms of satisfying <u>Business Function Information</u> needs. This is not the same as System Analysis & Design in which the system is described in terms of detailed system functionality (e.g. Logical Data Architecture, Screens, Reports, Detailed System Function Specifications, Test Plans).</p> <p>This differs from Business Analysis, which is targeted toward the Mission Statement, Goals and Objectives and the relative processes of an Enterprise or a Business Function (Unit). Other deliverables from a “Business Analysis” (Study) initiative could also be a “Business Process Re-engineering” (i.e. BPR) or a “Business Process Improvement” (i.e. BPI) report with the supporting “Enhanced Business Process” and possibly “Personnel Organization Chart(s)” and supporting “Position Job Description” documentation.</p>

2.3 PROCESS NOTES/GENERAL PROCEDURES

Primary SDLC Methodology Process Participant

In the following SDLC Methodology Process descriptions, the Primary Participant is indicated by Bold-Italic font (e.g. ***ISB Business Analyst (BA)***).

3 SDLC METHODOLOGY – MAJOR/MINOR SOFTWARE DEVELOPMENT/ENHANCEMENTS

3.1 INITIATE PHASE

Purpose

In this phase a request for system change (which could range from a bug fix to a new system) is received, evaluated and, if deemed feasible, a change request is created. If it’s a major change, the System Requirements Phase is initiated.

Deliverables

Deliverable	Responsibility	M = Mandatory PD = Project Dependent
Change Request The User “Change Request” is initiated by entering it into JIRA or SCM repository using the Create Change Request process.	PA ISB BA	M PD

Deliverable	Responsibility	M = Mandatory PD = Project Dependent
Detailed Description of Requirements This consists of a separate document in addition to a brief requirements description in the relative JIRA ticket or SCM repository. The document content may range from a brief description of a new system or a major system enhancement to support the business information needs for large projects to a basic description for a minor change (e.g. correct the identified “system bug” in the Child Care Subsidy – Claims screen as indicated by the system error message). In the latter instance, captured screen images should be included for information purposes.	PA, ISB BA	PD
Business Case Report This could be a Cost / Benefits Analysis report which identifies direct and indirect costs and benefits.	PA, ISB BA	PD
Formal Project Request Estimate Request(s) This could be: <ul style="list-style-type: none"> • an Informal Quote for System Requirements Development • an “Invitation To Quote” (ITQ) for System Requirements and possibly for a “guesstimate” of the total system/system enhancement • a “Request For Proposal” (RFP) for a total system solution. 	ISB BA, PA	PD

3.1.1 Evaluate Request / Defect / Enhancement (*Program Administrator (PA)*)

Purpose

The Program Administrator (PA) receives a request for a system change or for a new system. The request is evaluated based on need, business case, and the Program Area’s system requirements priorities.

Participants

Participant Type P = Primary S = Supporting	Participant	Participant Role
P	<i>Program Administrator (PA)</i>	Responsible for Process Activities and Deliverables
S	Requester of the system or system change	Initiates Change Request

Participant Type P = Primary S = Supporting	Participant	Participant Role
S	Program Area Management (as required)	Approves Change Request
S	ISB Business Analyst (BA)	Consultant to PA

Methodology Process Activities

1. A PA receives a change request and evaluates the requirement and feasibility with the Program Area person who initiated the request.
2. If the request is rejected, the PA notifies all involved parties of the rejection and the reason(s) for the decision. If the request is accepted, the PA would perform the [Create Change Request](#) process.
3. If it's a major request then:
 - the PA would discuss the change request with the BA and, if technical advice is required, the BA would contact the appropriate ISB technical personnel (e.g. DA, DBA, Programmer)
 - the PA would obtain a consensus for approval to proceed to the next set of phases or reject the request. This may be done through meetings or other communication means with Program Area Management and any other interested user community members.

3.1.2 Create Change Request (Program Administrator (PA))

Purpose

This process describes the creation of a change request via JIRA or the Ministry SCM repository.

Participants

Participant Type P = Primary S = Supporting	Participant	Participant Role
P	<i>Program Administrator (PA)</i>	Primary User in creating change requests
S	Other Users Acting in the PA Role	Secondary Users that are able to create change requests on an "as required" basis

Methodology Process Activities

1. The PA creates a change request using JIRA or Ministry SCM repository. If supporting documentation is required (e.g. screen shots to illustrate a system bug), it should be included in the change request.

3.1.3 Review Request (ISB Business Analyst (BA))

Purpose

This process highlights the Business Analyst's role in assisting the Program Area in evaluating a change request.

Participants

Participant Type P = Primary S = Supporting	Participant	Participant Role
P	<i>ISB Business Analyst (BA)</i>	Provides system related request consulting services to the PA
S	Program Administrator (PA)	Reviews a system related request before approval
S	ISB Data Administrator (DA)	Provides data related consulting services as identified
S	ISB Database Administrator (DBA)	Provides database related consulting services as identified
S	ISB Programmer	Provides programming related consulting services as identified

Methodology Process Activities

1. The BA is notified when a PA creates a change request. The ISB BA reviews it for completeness and ensures that the PA has attached any required supporting documentation.
2. If the change request is for a minor change or to report a system malfunction, the BA may obtain advice from ISB technical personnel (i.e. ISB DA, DBA, Programmer) before proceeding.
3. If the change request is for a major change, the BA assists the PA with the change request evaluation and provides suggestions/recommendations regarding the request. This may include obtaining advice from ISB technical personnel (i.e. ISB DA, DBA, Programmer).
4. After the initial evaluation process, the BA would determine whether the request is to:
 - proceed to the next phase(s) with the change request
 - be placed on hold until some future date
 - be rejected

3.1.4 Review Data Requirements (ISB Data Administrator (DA))

Purpose

NOTE: This process is to be performed on an “as identified” basis when there are data implications. The purpose is to advise the BA and Program Area on possible data impact to support the change request’s requirements.

Participants

Participant Type P = Primary S = Supporting	Participant	Participant Role
P	<i>ISB Data Administrator (DA)</i>	Provides data related consulting to assist with change request evaluation
S	ISB Business Analyst (BA)	Obtains data impact used in evaluating the requested system change

Methodology Process Activities

1. Provide the BA with information on the potential data requirements based on the change request. This would assist the BA with evaluating the potential magnitude and/or feasibility of implementing the change.

3.1.5 Review System Requirements (*ISB Programmer*)

Purpose

NOTE: This process is to be performed on an “as identified” basis when there are major system function implications. The purpose is to advise the BA and Program Area on possible programming impact to support the change request requirements.

Participants

Participant Type P = Primary S = Supporting	Participant	Participant Role
P	<i>ISB Programmer</i>	Provides programming related consulting to assist with change request evaluation
S	ISB Business Analyst (BA)	Obtains impact used in evaluating the requested system change

Methodology Process Activities

1. Provide the BA with information on the potential system function(s) requirements based on the change request. This would assist the BA with evaluating the potential magnitude and/or feasibility of implementing the change.

3.1.6 Review Database Impact (*ISB Database Administrator (DBA)*)

Purpose

NOTE: This process is to be performed on an “as identified” basis when there are database implications. The purpose is to advise the BA and Program Area on possible impact to support the change request requirements.

Participants

Participant Type P = Primary S = Supporting	Participant	Participant Role
P	<i>ISB Database Administrator (DBA)</i>	Provides database related consulting to assist the change request evaluation
S	ISB Business Analyst (BA)	Obtains database impact used in evaluating the requested system change

Methodology Process Activities

1. Provide the BA with information on the potential database requirements based on the change request. This would assist the BA with evaluating the potential magnitude and/or feasibility of implementing the change.

3.1.7 Place change request “on hold” (*ISB Business Analyst (BA)*)

Purpose

In this process, a change request is placed on hold until a decision is made to either proceed with the development effort or permanently close the change request (i.e. Reject it). The reason for placing a change request on hold may be that either the time and/or the cost estimate is prohibitive at evaluation time.

NOTE: The change requests in this state are to be reviewed periodically by the BA and the PA, and a determination made if the change request should remain on hold, be re-activated or be rejected (i.e. closed request).

Participants

Participant Type P = Primary S = Supporting	Participant	Participant Role
P	<i>ISB Business Analyst (BA)</i>	Based on the program area decision, the BA would place a change request on hold or reject it or promote on it to the next phase
S	Program Administrator (PA)	Is responsible for advising the ISB BA on the course of action regarding a new change request or those on hold.

Methodology Process Activities

1. If the System Requirements are not being developed, the BA places the change request and any supporting documentation on hold.
2. The BA reviews change requests on hold on a periodic basis, and in consultation with the PA, determines if any of them are to:
 - remain on hold
 - be re-activated
 - be rejected (i.e. closed)

3.1.8 Reject change request (*ISB Business Analyst (BA)*)

Purpose

The process highlights a rejection of a new change request based on a preliminary review by the programmer area with the BA's assistance.

Participants

Participant Type	Participant	Participant Role
P = Primary S = Supporting		
P	<i>ISB Business Analyst (BA)</i>	Reject a change request

Methodology Process Activities

1. Based on the joint decision by the PA and ISB BA, the BA would close the respective change request(s).

3.2 SYSTEM REQUIREMENTS PHASE

NOTE: The detailed phase activities are to be done if the BA determines that it is a major change request or that the change requires additional System Requirements.

Purpose

In this phase, the User System Requirements are developed for a new system or major enhancements to an existing system. These Requirements must support the business information needs through manual procedures and automated processes (e.g. data capture, data processing and information reporting). If the Systems Analysis and Design deliverables are to be developed by External Developers under a separate contract, then the time / cost estimates should also be a deliverable in this phase.

Deliverables

Deliverable	Responsibility	M = Mandatory PD = Project Dependent
System Requirements Development Estimate	BA / External System Developer	PD
System Requirements Development Decision Document	Program Administrator	PD
System Requirements Documentation	External System Developer or ISB BA	PD
Data Requirements Review Report	ISB DA	PD
Estimate For System Analysis & Design / Design Effort This would be done only if the magnitude of the project warranted it.	External System Developer or ISB DA, DBA, ISB Programmer	PD

Deliverable	Responsibility	M = Mandatory PD = Project Dependent
Project Charter This is a Mandatory Deliverable for major projects such as major system enhancements or for a new system.	Program Administrator, ISB BA	PD
Next Phase Decision This consists of “written” communication from the PA to the ISB BA, which states whether or not the project is to proceed to the next phase.	Program Administrator	M
External Vendor Contract The contract may be for only the Requirements Phase or for the entire project.	Program Area Management, ISB BA, Ministry Contract Management Group	PD

3.2.1 Determine Project Magnitude (*ISB Business Analyst (BA)*)

Purpose

If the change is greater than a minor report or screen change (e.g. change the wording of a screen field title, move a report field to a different location or simple report or screen display) or an emergency system malfunction, then there could be a varying degree of Requirements and Design development. In this instance, the ISB BA:

- determines the scope of a change request or a related group of change requests
- decides if major Requirements Development is needed before proceeding with the Analysis / Design Phase.

Participants

Participant Type P = Primary S = Supporting	Participant	Participant Role
P	<i>ISB Business Analyst (BA)</i>	Determines project scope based on all available information

Methodology Process Activities

1. The BA reviews the change documentation stored in JIRA or SCM repository and determines the degree of “Requirements” and “Design” effort required to implement the system change
2. If it’s a minor change, then the BA may proceed to the **Systems Analysis** phase.
3. If it’s a major change and System Requirements development is required, then the BA would perform the [Prepare Requirements Estimate Request](#) process.

3.2.2 Prepare Requirements Estimate Request (*ISB Business Analyst (BA)*)

Purpose

If it's a major system change/enhancement, then the ISB BA would:

- develop or assist the PA with the development of a **Project Charter**. **NOTE:** The complexity of the charter is dependent on the scope/size of the development project.
- if an external vendor will be contracted to develop the requirements, develop a formal request (such as an Invitation To Quote (ITQ) or for large systems; a Request For Proposal (RFP)) in consultation with the Program Area
- if the requirements will be developed by an Internal BA or an internal BA under contract, an informal Requirements Development Estimate would suffice.

Participants

Participant Type P = Primary S = Supporting	Participant	Participant Role
P	<i>ISB Business Analyst (BA)</i>	Responsible for Requirements Estimate Request preparation
S	Program Administrator (PA)	Responsible for Project Charter preparation and assists ISB BA with Requirements Estimate Request

Methodology Process Activities

1. The BA jointly with the PA decides if External Vendors or internal BA(s) will develop the Requirements development.
2. The ISB BA develops or assists the PA with the development of a Project. **NOTE:** The complexity of the charter is dependent on the scope/size of the development project.
3. If the System Requirements are being developed internally, the BA would determine the estimate in time and cost through meetings with internal personnel (Ministry employees or Business Analysts on contract to the Ministry).
4. If the System Requirements are being developed by an external vendor, then ISB BA, in consultation with the Program Administrator, would:
 - develop a formal request such as an Invitation To Quote (ITQ); or for large systems, a Request For Proposal (RFP)
 - forward the request to potential external vendors for evaluation and formal estimates. **NOTE:** The Project Charter would be an integral component of the formal request.

3.2.3 Estimate for System Requirements Development (*External System Developer*)

Purpose

An external company provides an estimate for System Requirements development based on an Invitation-To-Quote (ITQ) for a minor to medium sized projects or Request-For-Proposal (RFP) for major projects. The ITQ or RFP may include a request for a “ball-park” or “fixed price” estimates to complete the Systems Analysis, System Development, Integration System Testing and Implementation phase activities.

Participants

Participant Type P = Primary S = Supporting	Participant	Participant Role
P	<i>External System Developer</i>	Responsible for providing requested estimates
S	ISB Business Analyst (BA)	Provides Estimates Consultation (as required)

Methodology Process Activities

1. The BA would liaise with External System Developer, as required, by providing information regarding the System Requirements.
2. The external company would forward the estimate(s) to the BA for review.

3.2.4 Estimate for System Requirements Development (*ISB Business Analyst (BA)*)

Purpose

Ministry or contracted Business Analysts estimate in-house System Requirements development.

Participants

Participant Type P = Primary S = Supporting	Participant	Participant Role
P	<i>ISB Business Analyst (BA)</i>	Responsible for estimating Requirements development effort by internal BA(s)

Methodology Process Activities

1. Based on the change request and any supporting documentation, the BA would estimate the amount of time (and cost if a contractor were to be hired) that would be required to develop the System Requirements in-house.

3.2.5 Evaluate System Requirements Development Estimate (*Program Administrator (PA)*)

Purpose

The Program Administrator (with ISB BA assistance) reviews the time & cost estimates and decides whether or not to proceed with the Requirements Development and who would develop the System Requirements (i.e. an ISB BA or an External System Developer).

Participants

Participant Type P = Primary S = Supporting	Participant	Participant Role
P	<i>Program Administrator (PA)</i>	Responsible for deciding on whether or not to proceed with the System Requirements development
S	ISB Business Analyst (BA)	In a consulting capacity

Methodology Process Activities

1. The PA reviews the time & cost estimates and with BA assistance decides whether to proceed with the Requirements Development or defer the change request to some future date.
2. If development is to proceed, then the BA and PA decide who will develop the System Requirements, internal ISB BA or a BA on contract; or an External Vendor.
3. The PA prepares a decision communication and forwards it to the assigned BA for the record.

3.2.6 Assist with Evaluating Requirements Development Estimate (*ISB Business Analyst (BA)*)

Purpose

The BA assists the Program Administrator with the estimate evaluation and the decision whether or not to proceed with the Requirements Development.

Participants

Participant Type P = Primary S = Supporting	Participant	Participant Role
P	<i>ISB Business Analyst (BA)</i>	In a consulting capacity to the PA

Methodology Process Activities

1. The BA would assist the PA with the decision regarding Systems Requirements development.
2. The BA receives the decision communication.
3. If development is to be done in-house with the assistance of contract help, the BA arranges for a Contract BA.
4. If the development is to be done by an external company, the BA participates in the preparation of the contract by interested parties.

3.2.7 Place Project “On Hold” (*ISB Business Analyst (BA)*)

Purpose

The BA places a project on hold until a decision is made to proceed with the development effort or permanently close the project. The reason for this decision may be that either the time and/or the cost estimate is prohibitive at evaluation time.

NOTE: The change requests in this state are to be reviewed periodically by the BA and the PA, and a determination made if the change request should remain on hold, be re-activated or be rejected (i.e. closed).

Participants

Participant Type P = Primary S = Supporting	Participant	Participant Role
P	<i>ISB Business Analyst (BA)</i>	Responsible for placing a change request on hold / Re-activating a change request that is on hold / rejecting a change request (i.e. close)
S	Program Administrator (PA)	Provides direction regarding change request on hold

Methodology Process Activities

1. If System Requirements are not being developed, the BA would place the change request (and any supporting documentation) on hold.
2. The BA reviews change requests that are on hold on a periodic basis and, in consultation with the PA, determine if any of them are to:
 - remain on hold
 - be re-activated
 - be rejected (i.e. closed)

3.2.8 Develop System Requirements & Estimate Design (External System Developer)

Purpose

This process describes the activities performed by an External System Developer developing the System Requirements and estimating the effort and cost for specified subsequent phases.

Participants

Participant Type P = Primary S = Supporting	Participant	Participant Role
P	<i>External System Developer</i>	Responsible for developing System Requirements & Subsequent Phases Estimates
P	<i>Program Area Representatives</i>	Responsible for providing System Requirements Information
S	ISB Business Analyst (BA)	Participates in System Requirements development
S	ISB Data Administrator (DA)	Participates in System Requirements development by providing data related consulting

Methodology Process Activities

1. If the change request is an enhancement, the ISB BA would forward the developed System Requirements documentation to the External Developer for enhancement.
2. Based on information obtained through initial change request documentation, Joint Application Design (JAD) sessions, meetings and consultation with the Program Area Representatives, ISB BA and DA, the External Developer would develop the System Requirements to support the identified Business Function needs.
3. When the System Requirements have been completed, they are forwarded to the ISB BA for review and sign-off.
4. If requested, estimates for subsequent phases are completed by the External Developers and forwarded to the ISB BA for review with the PA.

3.2.9 Develop / Review System Requirements (*ISB Business Analyst (BA)*)

Purpose

This process describes the activities to either:

- develop/enhance and QA System Requirements developed by Internal BA(s) and estimate the effort for the System Analysis & Design phase
- participate (in a consultative capacity) in system development/enhancement and QA System Requirements developed by External System Developers.

Participants

Participant Type P = Primary S = Supporting	Participant	Participant Role
P	<i>ISB Business Analyst (BA)</i>	Responsible for System Requirements Development
P	<i>Program Area Representatives</i>	Responsible for providing System Requirements Information
S	ISB Data Administrator (DA)	Participates in System Requirements development by providing data related consulting

Methodology Process Activities

1. If it's a minor change, then
 - check the change request and any supporting documentation to ensure that the Requirements specifications are complete
 - if additional details are required, in discussion with the user community, the BA would complete the Systems Requirements specifications and check the Requirements in to the SCM repository.
2. If it's a major change then:
 - if the change request is an enhancement, the BA would check-out any previous System Requirements documentation from the SCM repository.
 - based on information obtained through initial change request documentation, Joint Application Design (JAD) sessions, meetings with the Program Area Representatives and consultation with the

ISB DA, the ISB BA would develop the System Requirements to support the identified Business Function needs

3. When the System Requirements have been completed, check-in the System Requirements in to the SCM repository.
4. If the System Analysis & Design phase is to be done in-house, the ISB BA would request estimates from the ISB System Analysis and Design team and forward them to the PA for evaluation.

3.2.10 Review Data Requirements (ISB Data Administrator (DA))

Purpose

This process highlights the importance of Data Administrator participation in the initial phases of an enhancement or new system. By having the DA provide data related consultation at the Requirements phase, the risk of not having the data and/or the appropriate data architecture to support current and potential future business information needs is greatly reduced.

Participants

Participant Type P = Primary S = Supporting	Participant	Participant Role
P	<i>ISB Data Administrator (DA)</i>	Responsible for providing data related consultation
S	External System Developer	Responsible for System Requirements (if Requirements are being developed externally)
S	ISB Business Analyst (BA)	Responsible for System Requirements (if Requirements are being developed internally)

Methodology Process Activities

1. Participate in Joint Application Design (JAD) and meetings to ensure that the data and/or the appropriate data architecture to support current and potential future business information needs is met. This includes assurance of data integrity and effective data acquisition by the envisioned System Processes.
2. If the change is to replace an existing system, identify requirements for Data Conversion.
3. Using the Requirements documentation provided by the BA or obtaining a copy of the documentation from the SCM repository, ensure that all data related information; including the associated Business Rules regarding the data are included in the System Requirements documentation. This provides the basis for the next phase in the methodology.
4. Prepare a Data Requirements Review Report documenting observations/ comments/ recommendations regarding the data related requirements to support the System Requirements prepared by External System Developers or by Internal BA(s)
5. Check the Data Requirements Review Report in to the SCM repository.

3.2.11 Estimate Data Architecture Development (ISB Data Administrator (DA))

Purpose

The ISB DA is to provide an estimate of the time required to develop Logical Data Architecture.

NOTE: This process applies to System Requirements that have been developed by an ISB BA.

Participants

Participant Type P = Primary S = Supporting	Participant	Participant Role
P	<i>ISB Data Administrator (DA)</i>	Provides an estimate for Logical Data Architecture development

Methodology Process Activities

1. Obtain a copy of the System Requirements documentation from the SCM repository.
2. Estimate the effort for creating Logical Data Architecture and forward the estimate to the ISB BA for evaluation.

3.2.12 Estimate Systems Analysis / Design (*ISB Programmer*)

Purpose

The ISB Programmer prepares an estimate of the time required to develop a System Functions Design which includes function code specifications, screens / reports layouts.

NOTE: This process applies to System Requirements that have been developed by an ISB BA.

Participants

Participant Type P = Primary S = Supporting	Participant	Participant Role
P	<i>ISB Programmer</i>	Provides an estimate for system functions specification and screen/report design development

Methodology Process Activities

1. Obtain a copy of the System Requirements documentation from the SCM repository.
2. Estimate System Functions Specifications and screens / reports layout design.
3. Forward the estimates to the ISB BA for evaluation.

3.2.13 Estimate Database Design (*ISB Database Administrator (DBA)*)

Purpose

The ISB Database Administrator (DBA) prepares an estimate of the time required to develop any special/unusual database requirements design (e.g. temporary data conversion databases) specific to the System Requirements. In normal circumstances, the database design estimate is dependent on the Logical Data Architecture development.

NOTE: This process applies to System Requirements that have been developed by an ISB BA.

Participants

Participant Type P = Primary S = Supporting	Participant	Participant Role
P	<i>ISB Database Administrator (DBA)</i>	Provides an estimate for Physical Database Objects design
S	ISB Data Administrator (DA)	Consultant on Data Architecture Impact on Database Design
S	ISB Programmer	Consultant on Database Design impact on Programming effort

Methodology Process Activities

1. Obtain a copy of the System Requirements documentation from the SCM repository.
2. Determine (in consultation with the ISB DA and Programmer) if there are any unusual data requirements that will require additional database design objects not specified in the Logical Data Architecture that need to be developed in the next phase. An example would be the design of a Temporary Database to accommodate Data Conversion.
3. If there were any special design requirements, the DBA would estimate the additional effort and forward the estimate to the ISB BA.

3.2.14 Review/Sign-off Requirements (Program Administrator (PA))

Purpose

The Program Area Users review the requirements through working sessions/JADs with the participants involved in developing the User System Requirements. After the reviews have been completed and the requirements have been determined to meet the User needs, the Program Area project sponsor signs-off the requirements. This officially sets the scope and deliverables for the project.

Participants

Participant Type P = Primary S = Supporting	Participant	Participant Role
P	<i>Program Administrator (PA)</i>	Responsible for formally accepting the System Requirements
S	Designated System Requirements Development Participants	Act in a consulting capacity

Methodology Process Activities

1. Obtain a copy of the System Requirements documentation from the ISB BA.
2. Review the User System Requirements with designated System Requirements development participants.
3. Make any last minute changes to the Requirements documentation.
4. Repeat steps 1 – 3 until the Program Area users are satisfied with the User System Requirements.
5. When the Program Area users are satisfied with the System Requirements, then:
 - the Program Area project sponsor and designated parties sign-off the System Requirements

- the ISB BA is provided with a signed-off copy and a soft copy of the System Requirements. This officially sets the scope and deliverables of the Release.

3.2.15 QA/Approve System Requirements (*ISB Business Analyst (BA)*)

Purpose

The ISB BA assists the PA in assuring requirements completeness so that the project sponsor is in a position to sign-off the System Requirements.

Participants

Participant Type	Participant	Participant Role
P = Primary S = Supporting		
P	<i>ISB Business Analyst (BA)</i>	QA System Requirements and checks in the accepted System Requirements documentation

Methodology Process Activities

- The ISB BA checks-out the Requirements and any System Analysis & Design development estimates from the SCM repository.
- The BA provides consultative services to the PA by:
 - reviewing the System Requirements to ensure completeness
 - approving the System Requirements for sign-off by the project sponsor.
- When the BA receives the signed-off System Requirements, the BA, would:
 - record who signed off the Requirements and the sign-off date
 - if System Requirements have been previously checked in to the SCM repository, check out the latest version of the System Requirements documentation
 - check in the approved System Requirements documentation in to the SCM repository.

3.2.16 Evaluate Analysis & Design Estimates / Development Priority (*Program Administrator (PA)*)

Purpose

The purpose of this process is for the PA to be able to:

- evaluate the estimate(s) for the development of the System Analysis and Design deliverables
- assess further development activities within context of the branch priorities
- arrive at a decision of either proceeding with the project or deferring development until some future date.

Participants

Participant Type	Participant	Participant Role
P = Primary S = Supporting		
P	<i>Program Administrator (PA)</i>	Decides on project continuation
S	ISB Business Analyst (BA)	Assists the PA with the project continuation

Participant Type	Participant	Participant Role
P = Primary S = Supporting		
		decision

Methodology Process Activities

1. The PA reviews the development estimate(s) for the System Analysis and Design deliverables development in context of the branch priorities with assistance of the BA.
2. When the evaluation is complete, the PA prepares a decision and forwards it to the BA for action.

3.2.17 Assist with Evaluating Analysis & Design Estimates/Development Priority (*ISB Business Analyst (BA)*)

Purpose

The ISB BA assists the PA with the decision regarding the next phase of the project within branch priorities.

Participants

Participant Type	Participant	Participant Role
P = Primary S = Supporting		
P	<i>ISB Business Analyst (BA)</i>	Assists the PA with the project continuation decision

Methodology Process Activities

1. The BA provides consultative services to the PA in making the decision on whether to proceed with the next phase or place the project on hold until some future date.
2. When the BA receives the project decision from the PA, the BA would record the decision

3.2.18 Place Project “On Hold” (*ISB Business Analyst (BA)*)

Purpose

A project is placed on hold until a decision is made to proceed with the development effort or permanently close the project. The reason for this decision may be that either the time and/or the cost estimate is prohibitive at evaluation time.

Participants

Participant Type	Participant	Participant Role
P = Primary S = Supporting		
P	<i>ISB Business Analyst (BA)</i>	Responsible for placing the change request on hold / Re-activating a change request / rejecting a change request (i.e. closing the change request)

Participant Type	Participant	Participant Role
P = Primary S = Supporting		
S	Program Administrator (PA)	Provides decisions regarding Projects on hold.

Methodology Process Activities

1. If the System Requirements are not being developed, the BA would place the change request on hold.
2. The BA reviews change requests on hold on a periodic basis and, in consultation with the PA. determine if any of them are to:
 - remain on hold
 - be re-activated
 - be rejected (i.e. closed)

3.2.19 Approve start of System Analysis & Design (*ISB Business Analyst (BA)*)

Purpose

After consultation with and approval from the business area, the ISB BA notifies the project team on the start of System Analysis & Design.

Participants

Participant Type	Participant	Participant Role
P = Primary S = Supporting		
P	<i>ISB Business Analyst (BA)</i>	Notifies the project team on the start of Systems Analysis & Design

Methodology Process Activities

1. If the decision is made by the business area to proceed with the next phase of the project, the ISB BA would notify the project team of the start of System Analysis & Design.

3.3 SYSTEM ANALYSIS & DESIGN PHASE

Purpose

In this phase, the logical data architecture and any cross-references for screen/report development or data conversion are developed and detailed system functions are designed. The system design is based on the System Requirements and provides system developers with a detailed system programming “blueprint”. This includes:

- screen and report prototypes or layout designs which could include screen print-outs. **NOTE: There is no programming code at this stage of the SDLC. This occurs in the System Development Phase.**
- a cross-reference between the screen / report fields and the data architecture entity attributes which are the data source to support display screens and reports or data repository for data entry screens. This very important deliverable proves availability of data to support the business information needs.

- if data conversion is required, a cross-reference between the existing database and the new data architecture. In addition of identifying any missing data, this would also indicate the method of synchronizing the two data environments during the conversion process.

Deliverables

Deliverable	Responsibility	M = Mandatory PD = Project Dependent
New/Enhanced Logical Data Architecture For Oracle based application, new/enhanced logical data architecture in designated Oracle Designer Work Area. For applications that are not managed within Oracle Designer, then a logical architecture should be stored in the Ministry SCM repository in a Ministry-standard format. Please refer to the Sector’s Entity Relationship Modelling Standards and Guidelines.	External System Developer or ISB DA	PD
New/Enhanced Screen Prototypes / Design For Oracle based application, new/enhanced Oracle Forms screen prototype(s) in the Oracle Repository. For non-Oracle based applications, new/enhanced screen prototype(s) / layouts should be stored in the Ministry SCM repository.	External System Developer or ISB Programmer	PD
New/Enhanced Report Prototype(s) / Design For Oracle based application, new/enhanced Oracle Forms report prototype(s) in the Oracle Repository. For non-Oracle based applications, new/enhanced screen prototype(s) / layouts should be stored in the Ministry SCM repository.	External System Developer or ISB Programmer	PD
New/Enhanced “Data Architecture – Screen/Report” Cross Reference This maps new/enhanced data architecture to the screen / report fields.	External System Developer or ISB DA	PD
New/Enhanced Database Specifications/ Requirements Specifies any new/special database related requirements.	External System Developer or ISB DBA	PD
New/Enhanced System Program Modules/Functions Design/Specifications Specifies / describes the algorithms and processes that capture/process data and/or produce defined information	External System Developer or ISB Programmer	M
Data Conversion Cross Reference This maps the existing data structure to the new/enhanced data architecture.	External System Developer or ISB DA	PD
Data Conversion Strategy Based on the Data Conversion Cross Reference and any relative meetings/JAD sessions, this describes	External System Developer or ISB DA	PD

Deliverable	Responsibility	M = Mandatory PD = Project Dependent
the data conversion requirements and methods of converting existing data into the new/enhanced data architecture.		
Temporary Data Conversion Database Architecture This architecture is developed in the case where a temporary architecture is required to capture additional data to support the new/enhanced data architecture.	External System Developer or ISB DA	PD
Intermediate Data Conversion Cross Reference-Specification This maps the existing data structure to the Temporary Data Conversion Database Architecture and identifies what additional data would be required to complete the temporary database structure.	External System Developer or ISB DA	PD
Development Time / Cost Estimate The estimates are for development of the program code and if required the physical database	External System Developer, or ISB DBA, ISB Programmer	PD
Data Architecture QA Form This is a communication tool used to communicate Data Architecture QA Review results to other Internal Data Architects or External System Developers	ISB DA	PD
Special Database Tables Requirements Special Database Performance Requirements Special Database Access Requirements (including Security Matrix if applicable) Any or all components are to be developed as required.	External System Developer, or ISB DBA	PD
System Development Decision	PA	PD

3.3.1 Develop System Design & Data Architecture AND Estimate Development Effort (*External System Developer*)

Purpose

The External System Developers analyze/ design/ develop system components (e.g. logical data architecture, prototype screens/reports, screens/reports – data architecture cross reference, system function design) and prepare a System Development estimate if required.

Participants

Participant Type P = Primary S = Supporting	Participant	Participant Role
P	<i>External System Developers</i>	Responsible for performing the Analysis & Design
P	<i>Designated Program Area Representatives</i>	Responsible for providing “Person – Machine” Interface requirements to the design team
S	ISB Business Analyst (BA)	Provide consultation in the design effort
S	ISB Data Administrator (DA)	Provide consultation regarding data architecture components

NOTE:

1. ***In the case of Oracle based systems, the External System Developers would develop the data architecture and/or any Oracle Objects in an Oracle Designer environment.***
2. ***For non-Oracle-based systems, the External System Developers would develop the data architecture in a format that meets Ministry Data Modeling standards.***

Methodology Process Activities

1. The External System Developers would check out the System Requirements documentation from the SCM repository.
2. If the change request was for a system enhancement / modification, any available system design components would be checked-out.
3. Based on the System Requirements, JAD sessions (as required, with Designated Program Area Representatives, ISB BA, and ISB DA), and the scope of the project, the External System Developers would develop/enhance all or some of the following deliverables:
 - new/enhanced logical data architecture
 - new/enhanced screen prototype(s) / layouts
 - new/enhanced report prototype(s) / layouts
 - new/enhanced “Data Architecture – Screen/Report” Cross Reference
 - new/enhanced Database specifications/requirements
 - new/enhanced system program modules/functions design/specifications.
4. When the design has been completed, the External System Developers would check-in the design documentation to the Ministry SCM repository.
5. When notified of a QA Report check-in, the external design team would:
 - review and provide responses to the ISB QA “Queries/ Comments” documents
 - check the updated components into the Ministry SCM repository.
6. Step #5 would be repeated until the designed component(s) is/are approved.
7. When the ISB QA Reviews are complete, if requested, the External System developers would prepare an estimate for developing the designed components and forward the estimates to the ISB BA for evaluation.

3.3.2 Review/Sign-off “User-System Interface” Design (*Program Administrator (PA)*)

Purpose

The Program Area Users review the User-System Interface design (e.g. screens, reports) through working sessions/JADs with the System analysis & Design participants. When the reviews have been completed and the design approved by the designated Program Area Participants, the Program Area project sponsor and other designated parties sign-off the design documents. This officially sets the system development scope of the project.

Participants

Participant Type	Participant	Participant Role
P = Primary S = Supporting		
P	<i>Program Administrator (PA)</i>	Responsible for obtaining System Design

Participant Type P = Primary S = Supporting	Participant	Participant Role
		Acceptance
S	ISB Business Analyst (BA)	Assists the PA in obtaining System Design Acceptance
S	ISB Programmer	Assists the PA in obtaining System Design Acceptance

Methodology Process Activities

NOTE: Objects such as Entity Relationship Diagrams (ERDs), Data Dictionary, and Function/Data usage matrices should be included in the Appendix of the System Design document.

1. Obtain a copy of the System Design documentation from the SCM repository.
2. With user, ISB BA, and ISB Programmer participation, review the System Design.
3. When the Users are satisfied with the User-System Interface Design, the Program Area project sponsor and other designated parties sign-off the design that officially sets the system development scope of the project.

3.3.3 Review “User-System Interface” Design (*ISB Business Analyst (BA)*)

Purpose

The purpose of this process is to describe the ISB BA’s participation in reviewing the System Design.

Participants

Participant Type P = Primary S = Supporting	Participant	Participant Role
P	<i>ISB Business Analyst (BA)</i>	Participates in the development and review of the “User – System Interface” design

Methodology Process Activities

NOTE: Objects such as ERDs, Data Dictionary, and Function/Data usage matrices should be included in the Appendix of the User-System Interface Design document.

1. The BA obtains a copy of the System Requirements documentation.
2. With user participation, the BA reviews the System Design through sessions/JADs with either the respective ISB Technical Team or the External System Developers (if it is to be developed by an External vendor).
3. When the Users are satisfied with the System Design and the Program Area project sponsor signs-off the System Design, the BA approves the User-System Interface Design.

3.3.4 Develop OR QA/Approve Data Architecture (*ISB Data Administrator (DA)*)

NOTE:

1. *This process would not be performed if there are no data implications.*
2. *If there are data implications, then during either the QA Review or internal development process, the DA would perform the functions in consultation with the ISB DBA.*

Purpose

This process identifies the development or QA review by the ISB DA of:

- a new/enhanced data architecture
- a new/enhanced “Data Architecture – Screen/Report” Cross Reference
- a new/enhanced Data Conversion Cross Reference and Data Conversion Strategy
- estimate for Physical Data Architecture Development

Participants

Participant Type P = Primary S = Supporting	Participant	Participant Role
P	<i>ISB Data Administrator (DA)</i>	Develops / Reviews Logical Data Architectures
S	ISB Database Administrator (DBA)	Assists the DA in a consulting capacity
S	External System Developers	Provides input/action based on ISB DA’s review feedback

Methodology Process Activities

Data Architecture to be done by an External Vendor

1. Based on notification by the External System Developers, the ISB DA would:
 - perform a QA review of the new/enhanced logical data architecture
 - perform a QA review of the new/enhanced “Data Architecture/Database – Screen/Report” Cross Reference(s)
 - perform a QA review of the relative data conversion Data Conversion Cross Reference and Data Conversion Strategy.
2. If there were questions, comments or modification requests based on the review, the ISB DA would:
 - prepare a Data Architecture QA Form
 - check the new/updated Data Architecture QA Form into the Ministry SCM repository.
3. If the identified modifications require system requirements enhancements, the ISB DA would notify the ISB BA.
4. If there were additional questions, comments or modification requests based on the review the ISB DA would:
 - Check out updated QA Review Form from the Ministry SCM repository.
 - perform a follow-up review and update the Data Architecture QA form
 - share the updated form with the External Vendor and check the updated form back into the SCM repository.
5. Step #4 would be repeated until the ISB DA is satisfied with the designed architecture.

Data Architecture to be done by ISB DA

1. If the analysis and design is to be done by the ISB DA, depending on the scope of the project, the DA would:
 - develop a new/enhanced logical data architecture in either Oracle Designer or other approved data modelling tool.
 - if the new/enhanced “Data Architecture/Database – Screen/Report” Cross Reference(s) is to be developed by an ISB Programmer, then the ISB DA would review the Cross Reference. If, for some reason, the ISB Programmer is unable to develop the new/enhanced “Data Architecture/Database – Screen/Report” Cross Reference(s), then the ISB DA would work with them to perform this activity.
 - if required, develop a relative data conversion Data Conversion Cross Reference and Data Conversion Strategy
 - with ISB DBA assistance, prepare an estimate for developing the Physical “Server” Data Architecture
 - check the non-Oracle components into the Ministry SCM repository.

3.3.5 Plan / Design Data Architecture For Data Conversion (*ISB Data Administrator (DA)*)

Purpose

If an application’s data architecture is being redeveloped because the application is being re-written, then system implementation would normally include data conversion. To perform data conversion, a data conversion strategy and possibly temporary data architecture may be required to complete the missing data before it can be loaded into the new database.

Participants

Participant Type P = Primary S = Supporting	Participant	Participant Role
P	<i>ISB Data Administrator (DA)</i>	Review / Develop Temporary Data Conversion Architecture
S	ISB Business Analyst (BA)	Provides data conversion consulting from a business perspective
S	ISB Database Administrator (DBA)	Provides data conversion consulting from a database perspective
P	<i>External System Developers</i>	If data conversion is to be done by External System Developers, they would develop Temporary Data Conversion Architecture

Methodology Process Activities

Data Conversion Planning to be done by External System Developers

1. The ISB DA reviews the Data Conversion strategy, design, and any cross references to ensure that existing data and any additional enhancements can be converted into the new data architecture.
2. If there are any questions, comments, or modification requests then the ISB DA would:
 - prepare a Data Architecture QA Form
 - check the Data Architecture QA Form into the Ministry SCM repository.
3. If there are subsequent questions, comments, or modification requests based on the review the ISB DA would:
 - check out the QA Review Form from the Ministry SCM repository.

- perform a follow-up review and update the Data Architecture QA form
 - check the updated form back into the Ministry SCM repository.
4. Step #3 would be repeated until the ISB DA is satisfied with the designed architecture.

Data Conversion Planning to be done by ISB DA

1. The ISB DA prepares the Data Conversion Cross Reference and the relative Data Conversion Strategy and checks the components into the Ministry SCM repository.
2. If the Data Conversion Strategy indicates that conversion of old data and additional new data requires a separate temporary database, the DA would:
 - develop a Temporary “Data Conversion” Database Architecture, an Intermediate Data Conversion Cross Reference-Specification which includes the Data Load Method
 - check the appropriate components into the Ministry SCM repository.

3.3.6 Develop System Design / Estimate Development Effort OR QA/Approve System Design (ISB Programmer)

Purpose

The ISB Programmer designs program/system function(s) and prepares an estimate for the system functions/programs development effort; or performs a QA review of the External Systems Developers System Design.

Participants

Participant Type P = Primary S = Supporting	Participant	Participant Role
P	<i>ISB Programmer</i>	If Internal Design, responsible for performing the Analysis & Design OR if External System Development Design, responsible for Design QA
P	<i>Designated Program Area Representatives</i>	Responsible for providing “Person – Machine” Interface requirements to the design team
S	ISB Business Analyst (BA)	Provide consultation in the design effort
S	ISB Data Administrator (DA)	Provide consultation regarding data architecture components
S	ISB Database Administrator (DBA)	As a Database Consultant
S	External System Developer	

Methodology Process Activities

System Design to be done by External System Developer

1. The ISB Programmer would review the system design documentation.
2. If the identified modifications require system requirements enhancements, the ISB Programmer would notify the ISB BA.
3. If there were any questions, comments or modification requests that were specific to the deliverable submitted by the External System Developer, then the ISB Programmer would notify the External System Developers of deficiencies in the design.

- Steps #1 - #3 would be repeated until the designed components pass the review.

System Design to be done by ISB Programmer

- If the application is being enhanced, the ISB Programmer would check out the appropriate documents from the Ministry SCM repository.
- Based on the System Requirements, JAD sessions (as required) with Designated Program Area Representatives, ISB BA and ISB DA, and the scope of the project, the ISB Programmer would develop/enhance all or some of the following deliverables:
 - New/Enhanced Screen prototypes / design
 - New/Enhanced Report prototype(s) / design
 - New/enhanced “Data Architecture – Screen/Report” Cross Reference
 - New/enhanced system program modules/functions design/specifications.

NOTE: For Oracle-based deliverable(s), the ISB Programmer would perform the design in the ISB Designer repository.
- When the design has been completed, the ISB Programmer would check in the non-Oracle components into the Ministry SCM repository.
- If required, the ISB Programmer prepares a System Functions/Programs Development Estimate.

3.3.7 Develop Database Design / Estimate Development Effort OR QA/Approve Design (*ISB Database Administrator (DBA)*)

Purpose

This process describes any special database design requirements and identifies the need for estimating the database development effort.

Participants

Participant Type P = Primary S = Supporting	Participant	Participant Role
P	<i>ISB Database Administrator (DBA)</i>	If internal development, responsible for Database design or if Database design is by External System Developers, then responsible for QA/Approval of physical database design
P	<i>External System Developers</i>	If database design is being done under contract

Methodology Process Activities

Database Design to be done by External System Developers

- Depending on requirements and project scope, the External System Developer prepares some or all of the following design documentation depending on system requirements:
 - Special Database Tables Requirements
 - Special Database Performance Requirements
 - Special Database Access Requirements (e.g. Oracle Database Roles)
- The External System Developer checks the deliverables into the Ministry SCM repository.
- The ISB DBA checks out the documentation from the Ministry SCM repository and reviews the documentation.
- If the identified modifications require system requirements enhancements, the ISB DBA would notify the ISB BA.

5. If there were any questions, comments, or modification requests that were specific to the deliverable submitted by the External System Developer, then:
 - the ISB DBA notifies the External System Developers of the required changes
 - the External Developer checks out the affected deliverable(s) from the Ministry SCM repository, makes the appropriate modifications, and then checks the modified deliverables back into the Ministry SCM repository.
6. Steps #2 - #5 would be repeated until the requirements pass the review.

Database Design to be done by ISB DBA

1. Depending on requirements and project scope, the ISB DBA prepares some or all of the following design documentation depending on system requirements:
 - Special Database Tables Requirements
 - Special Database Performance Requirements
 - Special Database Access Requirements (e.g. Oracle Database Roles).
2. The ISB DBA then:
 - prepares a Database Development Estimate (if required)
 - checks-in the non-Oracle components into the Ministry SCM repository.

3.3.8 Assist With Data Conversion Planning / Design (*ISB Database Administrator (DBA)*)

Purpose

The ISB DBA assists with the Data Conversion Planning and Design.

Participants

Participant Type	Participant	Participant Role
P = Primary S = Supporting		
P	<i>ISB Database Administrator (DBA)</i>	Acts as consultant to the Data Conversion Planning/Design team

Methodology Process Activities

1. If any pertinent design documentation has been checked into the Ministry SCM repository, the ISB DBA checks out the documentation for perusal.
2. The ISB DBA participates in data conversion meetings/sessions as a database consultant.

3.3.9 Evaluate System Development Estimates / Development Priority (*Program Administrator (PA)*)

NOTE: This process applies to new systems or major enhancements to a system.

Purpose

The Program Administrator with the Program Area Management and in consultation with the ISB BA review the estimate(s) and decide if the project is to proceed to development and implementation or be placed on hold.

Participants

Participant Type P = Primary S = Supporting	Participant	Participant Role
P	<i>Program Administrator (PA)</i>	Responsible for obtaining a System “Go / No-Go” decision from Program Area Management
P	<i>Program Area Management</i>	Responsible for deciding on viability of proceeding with system development
S	ISB Business Analyst (BA)	Assists the decision making process in a consulting capacity

Methodology Process Activities

1. The PA checks the relative System Development Estimate documentation out from the Ministry SCM repository and reviews it in consultation with the Program Area Management and ISB BA.
2. Based on the review, the PA prepares a decision document and forwards it to the ISB BA for action.

3.3.10 Assist with Evaluating System Development Estimates/ Development Priority (*ISB Business Analyst (BA)*)

Purpose

The ISB BA receives system development estimates from either the External System Developers or internal development team (i.e. ISB Programmers, ISB DBA) and assists the program area with the estimate(s) review. Based on the program area decision, the ISB BA either promotes the project into the Development State or places it on hold until a future decision is made whether to proceed with the project or to permanently reject it.

Participants

Participant Type P = Primary S = Supporting	Participant	Participant Role
P	<i>ISB Business Analyst (BA)</i>	Responsible for acting in a consulting capacity
S	Program Administrator (PA)	Provides the ISB BA with direction regarding project approval / rejection

Methodology Process Activities

1. The ISB BA reviews the System Development estimates with the Program Area Management and the PA.
2. If the project is to continue, the ISB BA arranges a meeting with the Change Management Board to set development priorities and schedule development.

3.3.11 Place Project “On Hold” (ISB Business Analyst (BA))

Purpose

A project is placed on hold until a decision is made to proceed with the development effort or permanently close the project. The reason for this decision may be that either the time and/or the cost estimate is prohibitive at evaluation time.

NOTE: Any projects put on hold are to be reviewed periodically by the BA and the PA, and a determination made if the project should remain on hold, be re-activated, or be rejected (i.e. closed).

Participants

Participant Type P = Primary S = Supporting	Participant	Participant Role
P	<i>ISB Business Analyst (BA)</i>	Responsible for placing a change request on hold / Re-activating a change request that is on hold / rejecting a change request
S	Program Administrator (PA)	Provides decisions regarding Projects on hold.

Methodology Process Activities

1. If the System is not being developed, the BA would put the project on hold.
2. On a periodic basis, the BA reviews the projects on hold and, in consultation with the PA, determines if any of them are to:
 - remain on hold
 - be re-activated
 - be rejected (i.e. closed)

3.3.12 Review Project Scope/Requirements and Schedule Development (Change Management Board (CMB))

The Change Management Board reviews all projects destined for development and based on the availability of the development personnel decide whether to proceed with development or delay the project until the required personnel are available for the Development Phase. If the project is to be temporarily delayed, the BA would be requested to place it on “temporary” hold until it can be rescheduled for development.

Participants

Participant Type P = Primary S = Supporting	Participant	Participant Role
P	<i>Change Management Board (CMB)</i>	May consist of ISB Management, DBA, Programmer(s), BA, and any other interested parties. The Board is responsible for scheduling development based on the availability of technical personnel.

Methodology Process Activities

1. The CMB reviews all of the projects that require development and decides on the development priority.
2. Based on the priority and development personnel availability, a combination of projects is then either scheduled for development or a decision is to place the project into a temporary hold state by the BA until the next review.
3. If the System Development is to proceed, the BA notifies the respective system development team members to proceed with System Development.

3.3.13 Place Project on Temporary HOLD (*ISB Business Analyst (BA)*)

Purpose

The BA places the project into a temporary hold state until the next meeting by the Change Management Board.

Participants

Participant Type P = Primary S = Supporting	Participant	Participant Role
P	<i>ISB Business Analyst (BA)</i>	Responsible for placing projects into a "Temporary Hold" state and re-activating any projects in "Temporary Hold".

Methodology Process Activities

1. The BA would put the project on hold and notifies the PA of the CMB decision.
2. The BA reviews the on-hold projects on a frequent basis (including prior to any CMB projects development review meeting) and, in consultation with the CMB members, determines which projects are to:
 - remain in the temporary hold state
 - proceed with development.
3. If the project(s) is/are to proceed, the BA would:
 - advise the developers (External System Developers or Internal Development Team depending on the decision on who would perform the development)
 - notifies the PA that development of the project has been reactivated.

3.3.14 Approve start of Development (*ISB Business Analyst (BA)*)

Purpose

After consultation with the business area, the ISB BA notifies the project team on the start of Development.

Participants

Participant Type P = Primary S = Supporting	Participant	Participant Role
P	<i>ISB Business Analyst (BA)</i>	Notifies the project team on the start of Development

Methodology Process Activities

1. If the decision is made to proceed with the next phase of the project, and all of the ISB approvals have been made (ISB BA, ISB DA, ISB DBA and ISB Programmer), the ISB BA would notify the project team of the start of Development.

3.4 DEVELOPMENT PHASE

Purpose

In this phase, the database, manual procedures, system functions (programs), and test plans are developed. The system functions are also Unit Tested in this Phase. The Unit Test Plans are based on the Detailed System Functions design. If data conversion is required from an existing database, the temporary database and any supporting conversion programs are developed and the temporary database is loaded with available data. If additional data is required, or if data discrepancies need to be corrected and there are no automated means that would satisfy business requirements, then the Program Area would be responsible for the manual data entry process to correct the deficiencies.

Deliverables

Deliverable	Responsibility	M = Mandatory PD = Project Dependent
Oracle Server Model	External System Developer or ISB DBA	PD
Oracle Database	External System Developer or ISB DBA	PD
Temporary Data Conversion Database	External System Developer or ISB DBA	PD
System Functions (Programming Objects)	External System Developer or ISB Programmer	M
System Function Unit Test Plan (new / enhancement)	External System Developer or ISB Programmer	M
System Function Unit Test Results	External System Developer or ISB	M

Deliverable	Responsibility	M = Mandatory PD = Project Dependent
	Programmer	
System Installation Guide	External System Developer or ISB Programmer	M
Temporary Data Conversion Functions (Programming Objects) This code is generally used once to convert the data into a new data architecture.	External System Developer or ISB Programmer	PD
Integration System Testing Plan (new / enhancement)	External System Developer or ISB Programmer	PD
User Acceptance Test Plan (new / enhancement)	External System Developer or Program Administrator (PA) or ISB BA	PD
Temporary Data Conversion System Functions	External System Developer or ISB Programmer	PD
User Procedures (new / enhancement)	External System Developer or Program Administrator (PA)	PD

3.4.1 Develop Database / System & Unit Test Functions (*External System Developer*)

Purpose

This highlights the system development effort being performed by External System Developers.

Participants

Participant Type P = Primary S = Supporting	Participant	Participant Role
P	<i>External System Developer</i>	Responsible for developing/providing the Database, System Functions, Unit and Integrated System Test Plans and Unit Test Results.

NOTE: Refer to the Database Design (Physical) Modelling Standards and Guidelines

Methodology Process Activities

System Development and System Unit Testing (SUT)

1. The Developers would check out the System Design documentation from the Ministry SCM repository.
2. If the development involves Oracle deliverables, the Developers would either export the required objects for development into their environment or arrange to perform development in the designated Ministry's Oracle Development work area.
3. If the project is an enhancement to an existing system, the Developers would check out the existing code, Unit and Integration System Testing Plans from the Ministry SCM repository.
4. If Unit Test Deficiencies have been identified, the Developers would check out the existing code from the Ministry SCM repository.
5. Based on the System Design, the Developers would:
 - a. if required, regenerate the database (using the Server Model if it's an Oracle based development)
 - b. if required, develop/update Unit Test plans and check them into the Ministry SCM repository.
6. For each change request, the Developer would:
 - a. develop/update program functions/code
 - b. Unit Test the functions, record the Unit Test Results, and attach the Unit Test Results to the respective change request(s)
 - c. check the code into the Ministry SCM repository.
7. Steps #3 - #6 would be repeated until the System Unit Tests have been approved which completes the SUT QA Reviews.
8. The Developer creates a new or updates an existing Integration System Testing Plan and checks it into the Ministry SCM repository.
9. The Developer creates new or updates existing System Installation Guide and checks it into the Ministry SCM repository.
10. Perform [Move Development Objects into ISB Delivery Environment](#) and [Perform Integrated System Test \(IST\)](#) processes.

Integration System Testing (IST) And User Acceptance Testing (UAT) - System Development and System Unit Testing (SUT)

1. Based on issues/deficiencies discovered during UAT or notifications received by other communication methods, the External Developer would:
 - ROLLBACK testing environment
 - check out the existing code from the Ministry SCM repository.
2. For each issue/deficiency, the Developer would:
 - develop/update program functions/code
 - Unit Test the functions, record the Unit Test Results, and check the Unit Test Results into the Ministry SCM repository.
 - check the code pertaining to the issue/deficiency into the Ministry SCM repository.
3. Perform [Move Development Objects into ISB Delivery Environment](#) and [Perform Integrated System Test \(IST\)](#) processes.
4. Steps #1 - #5 would be repeated until the IST and UAT have been approved.

3.4.2 QA User Procedures / User Acceptance Test Plan (*Program Administrator (PA)*)

Purpose

This process highlights the development or enhancement of detailed User Procedures and the User Acceptance Test Plan.

Both of these deliverables are based on the System Requirements. The User Procedures may extend beyond the requirements specification if the decision is to include manual procedures that extend beyond those that are directly related to the automated processes. The Program Administrator has the primary responsibility for the activities in this process.

Participants

Participant Type P = Primary S = Supporting	Participant	Participant Role
P	<i>Program Administrator (PA)</i>	Responsible for User Acceptance Test Plan and User Procedures development.
S	External System Developer	Responsible for User Acceptance Test Plan and User Procedures development (if being developed externally)
S	ISB Business Analyst (BA)	Acts in a consulting capacity for User Acceptance Test Plan and User Procedures development.
S	System User Community	Responsible for providing direction for User Procedures development

Methodology Process Activities

1. With the assistance of the User Community and the ISB BA, review and approve the new or enhanced User Procedures (developed by program personnel or External Procedure writers under contract) and the User Acceptance Test Plan based on new or enhanced System Requirements.
2. Submit the User Acceptance Test Plan to the ISB BA for inclusion in the Ministry SCM repository. This will be used for reference during User Acceptance Testing.

3.4.3 QA User Procedures / User Acceptance Test Plan (*ISB Business Analyst (BA)*)

Purpose

The ISB BA participates as a consultant in performing a QA review of the User Procedures and especially the developed User Acceptance Test Plan.

Participants

Participant Type P = Primary S = Supporting	Participant	Participant Role
P	<i>ISB Business Analyst (BA)</i>	In a consulting capacity, assists with User Procedures and UAT plan review.

Methodology Process Activities

1. If this is an enhancement to an existing system, the ISB BA would check out the existing User Acceptance Test Plan documentation from the Ministry SCM repository and forward it to the designated “User Acceptance Test Plan Developer” for update.
2. The ISB BA participates in the review of the User Procedures and the User Acceptance Test Plan.
3. Checks the new/updated User Acceptance Test Plan into the Ministry SCM repository.

3.4.4 Develop / Unit Test System Functions OR QA / Approve System Unit Test (*ISB Programmer*)

Purpose

The ISB Programmer may be responsible for developing a new system / application enhancement or perform basic Quality Assurance review of development done by External Systems Developers.

Participants

Participant Type P = Primary S = Supporting	Participant	Participant Role
P	<i>ISB Programmer</i>	Responsible for either system development or system QA review depending on whether the development is being done internally or by External System Developers.

Methodology Process Activities
System Development to be done by External System Developers

1. Check out the System Unit Test Results from the Ministry SCM repository and review the test results.
2. Check out the System Installation Guide from the Ministry SCM repository and review for completeness.
3. If the identified modifications require systems analysis and design enhancements, the ISB Programmer would notify the ISB BA, ISB DA, ISB DBA, the designated ISB Programmer and External System Developer.
4. If any other Deficiencies are noted, the ISB Programmer would notify the External System Developers of the observed errors.
5. Steps #1 - #4 are repeated until no deficiencies are observed. The ISB Programmer would notify the ISB BA that the work has been approved.

System Development to be done by ISB Programmer(s)
Change request System Development and System Unit Testing (SUT)

1. The Programmers would check out the System Design documentation from the Ministry SCM repository.

2. If the project is an enhancement to an existing system, the Programmer would check out the existing code and Unit and Integration System Testing Plans from the Ministry SCM repository.
3. Based on the System Design, the Programmer would:
 - if required, regenerate the database (using the Server Model if it's an Oracle-based development)
 - if required, develop/update Unit Test plans and check them into the Ministry SCM repository.
4. For each change request, the Programmer would:
 - develop/update program functions/code
 - Unit Test the functions, record the Unit Test Results, and check the Unit Test Results into the Ministry SCM repository
 - check the code pertaining to the respective change request under development into the Ministry SCM repository
5. The Programmer creates a new or updates an existing Integration System Testing Plan and checks it into the Ministry SCM repository.
6. The Programmer creates new or updates existing System Installation Guide and checks it into the Ministry SCM repository.
7. Perform [Move System Objects into ISB Delivery Environment](#) and [Perform / QA / Approve Integrated System Test](#) processes.

Integration System Testing (IST) And User Acceptance Testing (UAT) - System Development and System Unit Testing (SUT)

1. If applicable, the Programmer would access the relative issues/deficiencies created by the UAT testers.
2. Based on deficiencies identified during the IST or Deficiency packages created during UAT, the Programmer would:
 - ROLLBACK testing environment
 - check out the existing code from the Ministry SCM repository
3. For each change request, the Programmer would:
 - develop/update program functions/code
 - Unit Test the functions, record the Unit Test Results, and check the Unit Test Results into the Ministry SCM repository
 - check the code pertaining to the respective change request under development into the Ministry SCM repository.
4. Update the change request with any comments/observations.
5. Perform [Move System Objects into ISB Delivery Environment](#) and [Perform / QA / Approve Integrated System Test](#) processes.
6. Steps #1 - #5 would be repeated until the IST and UAT have been approved.

3.4.5 Develop & Implement Data Conversion Functions (*ISB Programmer*)

NOTE: This process is performed only if there is a need for automated processes to convert existing data into new data architecture.

Purpose

This process describes the activities in designing and developing “One-time” system functions to convert existing data into a new database structure.

Participants

Participant Type P = Primary S = Supporting	Participant	Participant Role
P	<i>ISB Programmer</i>	If conversion development is to be done by Ministry personnel.
P	<i>External System Developer</i>	If conversion development is to be done by an External vendor and reviewed by ISB Programmer

Methodology Process Activities
Data Conversion Development to be done by External System Developers

- The External Developer performs the following:
 - Checks out the data conversion documentation from the Ministry SCM repository.
 - develops and unit tests the conversion functions
 - for non-Oracle components, checks them into the Ministry SCM repository
 - for Oracle components, performs the coding and Unit Testing in either the vendor's environment or the designated Ministry Oracle Development Work Area.
- The ISB Programmer reviews the conversion process design and test results to ensure that the functionality satisfies the conversion process based on available data.

Data Conversion Development to be done by ISB Programmer(s)

- The Programmer(s) perform the following:
 - Checks out the data conversion documentation from the Ministry SCM repository
 - develops and unit tests the conversion functions
 - for non-Oracle components, checks them into the Ministry SCM repository
 - for Oracle components, performs coding and Unit Testing in the designated Ministry Oracle Development Work Area.

3.4.6 Develop OR QA/Approve Server Model / Database (*ISB Database Administrator (DBA)*)

NOTE: This process is performed only if there are data implications.

Purpose

If the database is to be developed by External System Developers, then the DBA would QA the database. If the database is being developed in-house, the DBA would be responsible for developing the database on a supported platform. At the time of writing, this would be on an Oracle platform.

Participants

Participant Type P = Primary S = Supporting	Participant	Participant Role
P	<i>ISB Database Administrator (DBA)</i>	Responsible for database development or QA review if database developed by External

Participant Type	Participant	Participant Role
P = Primary S = Supporting		
		System Developers.

Methodology Process Activities

Database Development to be done by External System Developers

1. After the database has been generated by the External Developers, the DBA would perform a QA review of the constructed database to ensure that it can support the business information needs as defined in the logical data architecture and highlighted in the System Requirements.
2. If the identified modifications require systems analysis and design enhancements, the ISB DBA would notify the ISB BA, ISB DA, ISB DBA, designated ISB Programmer, and External System Developer).
3. If the database does not pass the review, the DBA notifies the External System Developers of any deficiencies.
4. Steps #1 - #3 would be performed until the database passes the QA review. When the review is complete, the DBA would approve the change request and notify the ISB BA.

Database Development to be done by ISB DBA

1. Using the logical data architecture in Designer, the DBA would build the Server Model and generate the physical database.
2. When the DBA is satisfied the database would support the data for the business information needs, the DBA would approve the change request and notify the ISB BA.

3.4.7 Develop Temporary Data Conversion Database (*ISB Database Administrator (DBA)*)

NOTE: This process would be performed only if there was a need for a temporary database to support data conversion in an Oracle environment.

Purpose

If the Conversion database is being developed internally, the ISB DBA creates a temporary database to support data conversion.

Participants

Participant Type	Participant	Participant Role
P = Primary S = Supporting		
P	<i>ISB Database Administrator (DBA)</i>	Responsible or creating a temporary data conversion database.

Methodology Process Activities

1. Based on the logical data conversion architecture in Designer, the ISB DBA would forward engineer the temporary data conversion database in the appropriate Oracle Work Area.
2. Record that the activity has been completed in the project change request.

3.4.8 Perform Manual Data Conversion (Designated Program Area Personnel)

NOTE: This process is to be performed only if there is a requirement for converting existing data into a new database and there is no automated method of obtaining all of the required data to support the new data architecture.

Purpose

This process highlights the requirement for manual data input to populate a new database with incomplete existing data or to clean-up corrupted data in an existing data structure.

Participants

Participant Type	Participant	Participant Role
P = Primary S = Supporting		
P	<i>Program Administrator (PA)</i>	Responsible for manual data conversion and/or data clean up.

Methodology Process Activities

1. The PA would check out the Data Conversion Design documentation from the Ministry SCM repository.
2. Based on the specifications defined in the Data Conversion Design, and using whatever tools are available for the process, the designated data entry personnel would enter/correct data in a temporary data structure for loading into the production database.

3.4.9 Assign Release Number (ISB Release Manager)

Purpose

The ISB Release Manager works with the ISB BA and the Programmer/External Developer to assign a Release Number to the release.

Participants

Participant Type	Participant	Participant Role
P = Primary S = Supporting		
P	<i>ISB Release Manager</i>	Responsible for assigning a Release Number to the Release Package Group

Methodology Process Activities

1. When all of the approvals have been received and there are no other outstanding issues (e.g. Temporary Data Conversion Database Development), the ISB Release Manager would assign the next Release Number to the release. This release number is used in communications about the release, and in the scheduling of migration (release) windows.

3.4.10 Approve start of Integration System Testing (*ISB Business Analyst (BA)*)

Purpose

After notification from the programmers (ISB Programmer or External Developer), the ISB BA advises the project team on the start of Integration System Testing.

Participants

Participant Type P = Primary S = Supporting	Participant	Participant Role
P	<i>ISB Business Analyst (BA)</i>	Notifies the project team on the start of Integration System Testing.

Methodology Process Activities

- When all of the approvals have been received and there are no other outstanding issues (e.g. Temporary Data Conversion Database Development), the ISB BA would notify the project team of the start of Integration System Testing.

3.5 INTEGRATION SYSTEM TESTING (IST) PHASE

Purpose

In this phase, the individual system components are assembled into a total system and placed into a specified ISB “Delivery Environment”. The reasons for this phase are:

- to ensure that if there are any missing components, this would be identified before User Acceptance Testing
- the system functionality is tested according to an Integration System Testing test plan based on the system design. This step ensures that system deficiencies are corrected before the User Acceptance Test phase. This test could include a cursory test of the human-machine interfaces (e.g. screen content and control features, screen navigation, reports) by a designated Program Area representative.

Deliverables

Deliverable	Responsibility	M = Mandatory PD = Project Dependent
Release Note Some document topics would be: <ul style="list-style-type: none"> ➤ instructions for executing DB Scripts / code ➤ what functions and database tables are involved (i.e. System Functions – 	External System Developer	PD

Deliverable	Responsibility	M = Mandatory PD = Project Dependent
Database Xref Matrix)		
System Code	External System Developer or ISB Programmer	M
Database Objects	ISB DBA, External System Developer or ISB Programmer	PD
User Defined Set (UDS) This applies to Oracle Database Objects	External System Developer or ISB Programmer	PD
Integrated System Test (IST) Results	External System Developer or ISB Programmer	M
Deficiency Notification	ISB DBA, BA, Programmer	PD

3.5.1 Move Development Objects into ISB “Delivery Environment” (*External System Developer*)

Purpose

The External System Developers move all the system components (including any Oracle Objects) into specified ISB “Delivery Environments”.

Participants

Participant Type P = Primary S = Supporting	Participant	Participant Role
P	<i>External System Developer</i>	Responsible for performing this process
S	ISB Database Administrator (DBA)	Assists the External System Developer as required
S	ISB Programmer	Assists the External System Developer as required

NOTE: Refer to the following documents for the Ministry’s Oracle Design/Development Standards/Guidelines:

- *Oracle Designer 10g Standards and Guidelines*
- *Designer Repository Management Guide*

Methodology Process Activities

1. Obtain instructions and location from the ISB Programmer and/or ISB DBA into which “Delivery Environment” the system deliverables are to be placed for Integration Testing.
2. Move the system components into the designated “Delivery Environments”.
3. If the system is Oracle based, the External Developer would create a User Defined Set (UDS).
4. Set up the IST environment.

3.5.2 Perform Integrated System Test (IST) (*External System Developer*)

Purpose

If the system is totally developed by External System Developers, they would perform the Integrated System Test based on a developed Test Plan and report the Test Results to the ISB Programmer and ISB DBA if applicable.

Participants

Participant Type P = Primary S = Supporting	Participant	Participant Role
P	<i>External System Developer</i>	Performs the IST
S	ISB Programmer	Reviews IST Results
S	ISB Database Administrator (DBA) (if required)	Reviews IST Results

Methodology Process Activities

1. The External System Developers would:
 - check out the latest version of the IST Plan from the Ministry SCM repository.
 - perform the Integrated System Test
 - record the test results and forward them to the ISB Programmer for review.
2. On notification of any deficiencies by either the ISB Programmer or the ISB BA (for Person – System Interface Testing), the External System Developers would perform [Develop Database / System & Unit Test Functions](#).
3. Steps #1 - 2 are repeated until all IST deficiencies have been corrected.

3.5.3 Validate Screens/Reports During Integration Testing (*Program Administrator (PA)*)

NOTE: This process would be performed on an “as required” basis. It would be more critical in the case of a major new system implementation.

Purpose

A designated Program Area tester may be assigned to perform an initial User – System Interface test to ensure that the functions work according to the System Requirements. This initial pass is to reduce or hopefully eliminate any User - System interface deficiencies before User Acceptance Testing.

Participants

Participant Type P = Primary S = Supporting	Participant	Participant Role
P	Program Administrator (PA)	Primary Tester
S	ISB Business Analyst (BA)	In a consultative capacity to the PA

Methodology Process Activities

1. Based on the User-System Interface Design provided by the ISB BA, the Program Area Tester would perform a cursory test of the Interface components (e.g. screens, reports).
2. Any deficiencies would be noted and forwarded to the ISB BA for action.
3. Steps #1 - #2 would be performed until the Tester is satisfied with the test results.

3.5.4 Assist Designated PA(s) With Integration Testing (*ISB Business Analyst (BA)*)

NOTE: This process would be performed on an “as required” basis. It would be more critical in the case of a major new system implementation.

Purpose

This process highlights ISB BA participation in performance of the initial User – System Interface test with a designated Program Area tester.

Participants

Participant Type P = Primary S = Supporting	Participant	Participant Role
P	ISB Business Analyst (BA)	In a consultative capacity

Methodology Process Activities

1. The ISB BA checks out the User-System Interface Design document from the Ministry SCM repository and provides a copy to the Program Area Tester for a cursory test of the Interface components (e.g. screens, reports).
2. If the ISB BA receives identified deficiencies, the BA would notify the ISB Programmer and/or External System Developers for system correction.
3. Steps #1 - #2 would be performed until the Tester is satisfied with the test results.

3.5.5 Move System Objects into ISB “Delivery Environment” (*ISB Programmer*)

Purpose

The Internal System Developers move all the system components into designated ISB “Delivery Environments”.

Participants

Participant Type	Participant	Participant Role
P = Primary S = Supporting		
P	<i>ISB Programmer</i>	Responsible for performing this process
S	ISB Database Administrator (DBA)	Assists the ISB Programmer as required

Methodology Process Activities

1. The ISB Programmer(s) would move the system components (including any Oracle Objects) into the designated ISB "Delivery Environment".
2. If the system were Oracle based, the Programmer would create a User Defined Set (UDS).
3. Set up the IST environment.

3.5.6 Perform / QA/Approve Integrated System Test (IST) (*ISB Programmer*)

Purpose

If External System Developers test the system, then the ISB Programmer would perform a QA Review of the Integrated System Test Results. If the system were developed in-house, a designated Programmer would perform the Integrated System Test and check the Test Results into the Ministry SCM repository.

Participants

Participant Type	Participant	Participant Role
P = Primary S = Supporting		
P	<i>ISB Programmer</i>	Responsible for reviewing IST Results
S	External System Developer	Receives Deficiency notification if the IST is performed by an external vendor

Methodology Process Activities

Integrated System Test to be done by External System Developers

1. Receive the IST Results from the External System Developers and check them into the Ministry SCM repository.
2. The programmer notifies the External Developers of any deficiencies.
3. Steps #1 - #2 are repeated until all deficiencies have been corrected.
4. When testing has been completed, the Programmer notifies the ISB BA.

Integrated System Test to be done by ISB Programmer(s)

1. The Programmer(s) would check out the Integration System Testing Plan from the Ministry SCM repository.

2. Based on the System Design, the Programmer(s) would:
 - if the system is Oracle based, the Programmer would create a User Defined Set (UDS)
 - set up the IST environment
 - a designated Programmer would perform the IST, check the test results into the Ministry SCM repository, and notify the developer of any deficiencies.
3. When testing has been completed, the Programmer notifies the ISB BA.

3.5.7 QA/Approve Integration System Testing (IST) (*ISB Database Administrator (DBA)*)

NOTE: This process is performed only if there are data implications.

Purpose

If External System Developers test the system, then the DBA would perform a QA Review of the Integrated System Test Results to ensure that the database is functioning as designed. If the system were developed in-house, the DBA (in a consultative capacity) would assist the ISB Programmer(s) with the Integrated System Test.

Participants

Participant Type	Participant	Participant Role
P = Primary S = Supporting		
P	ISB DBA	Performs IST QA
S	ISB Programmer	Performs IST if an internal developed system
S	External System Developer	Performs IST of an external developed system

Methodology Process Activities

Integrated System Test to be done by External System Developers

1. Receive the IST Results from the External System Developers and check them into the Ministry SCM repository.
2. The DBA notifies the External Developers of any deficiencies.
3. Steps #1 - #2 are repeated until all deficiencies have been corrected.
4. When testing has been completed, the Programmer notifies the ISB BA.

Integrated System Test to be done by ISB Programmer(s)

1. The ISB DBA assists the ISB Programmer(s) with correcting any deficiencies observed in the database functionality during the Integrated System Testing.
2. Step #1 is repeated until all deficiencies have been corrected. The ISB DBA would then notify the ISB BA.

3.5.8 Approve Integration System Test (IST) (*ISB Business Analyst (BA)*)

Purpose

The approval indicates that from a business point of view, the system is ready for the full User Acceptance Testing.

Participants

Participant Type	Participant	Participant Role
P = Primary S = Supporting		
P	<i>ISB Business Analyst (BA)</i>	Approves the Release Package Group

Methodology Process Activities

1. The ISB BA approves that the system is ready for User Acceptance Testing.

3.5.9 Set-up UAT System Environment (*ISB Programmer*)

Purpose

The ISB Programmer moves the system components into the User Acceptance Test Environment.

Participants

Participant Type	Participant	Participant Role
P = Primary S = Supporting		
P	<i>ISB Programmer</i>	Responsible for setting-up system code in the UAT environment.

Methodology Process Activities

1. The ISB Programmer prepares system components for User Acceptance Test and advises the ISB BA that the UAT setup activity has been completed.

3.5.10 Set-up UAT Oracle Environment (*ISB Database Administrator (DBA)*)

NOTE: This process is performed only if there are data implications.

Purpose

The ISB DBA sets-up the Oracle User Acceptance Test Environment.

Participants

Participant Type	Participant	Participant Role
P = Primary S = Supporting		
P	<i>ISB Database Administrator (DBA)</i>	Responsible for performing this process

Methodology Process Activities

1. Using the User Defined Set (UDS) created by External Developers or Internal Programmers, the ISB DBA creates the relative Oracle System Configuration and moves it into the UAT Environment.
2. Advises the ISB Release Manager that the Oracle UAT setup activity has been completed.

3.5.11 Approve start of User Acceptance Testing (UAT) (*ISB Business Analyst (BA)*)

Purpose

The ISB BA advises the project team on the start of Integration System Testing.

Participants

Participant Type P = Primary S = Supporting	Participant	Participant Role
P	<i>ISB Business Analyst (BA)</i>	Notifies the project team on the start of User Acceptance Testing.

Methodology Process Activities

1. When the release has successfully passed Integration System Testing (IST), the ISB BA notifies the project team of the start of User Acceptance Testing (UAT)

3.6 USER ACCEPTANCE TESTING (UAT) PHASE

Purpose

In this phase, the system functionality is tested according to a User Acceptance Testing (UAT) test plan based on the System Requirements. Designated Program Area representatives and possibly the BA would perform the test. Any errors or deficiencies would be recorded. The developers would make the necessary changes to correct the identified deficiencies. After the changes are made, the system would be re-tested until no deficiencies are detected. If the test should identify a change, this may be recorded as a new change request for the next system release.

Deliverables

Deliverable	Responsibility	M = Mandatory PD = Project Dependent
Deficiency record	User Testers, ISB BA	PD
Change Request	User Testers, ISB BA	PD

3.6.1 Conduct User Acceptance Test / Signoff System Acceptance (*Program Administrator (PA)*)

NOTE: This process would be performed on an “as required” basis. It would be more critical in the case of a major new system implementation.

Purpose

Designated Program Area testers may be assigned to perform the User Acceptance Test to ensure that the functions work according to the System Requirements.

Participants

Participant Type	Participant	Participant Role
P = Primary S = Supporting		
P	<i>Program Administrator (PA)</i>	Responsible for ensuring User Acceptance Testing is done.
p	Designated Program Area Tester	Responsible for performing User Acceptance Test
S	ISB Business Analyst (BA)	In a consultative capacity

Methodology Process Activities

1. Based on the User Acceptance Test Plan provided by the ISB BA and the developed User Procedures, the Program Area Testers would perform the User Acceptance Test of the system functions and the procedures.
2. Any system deficiencies and/or new requirements would be noted and forwarded to the ISB BA for recording.
3. Steps #1 - #2 would be performed until no deficiencies are observed.

3.6.2 Participate In User Acceptance Test / APPROVE Production Implementation (*ISB Business Analyst (BA)*)

NOTE: This process would be performed on an “as required” basis. It would be more critical in the case of a major new system implementation.

Purpose

The ISB BA would assist designated Program Area testers to perform the User Acceptance Testing to ensure that the functions work according to the System Requirements.

Participants

Participant Type	Participant	Participant Role
P = Primary S = Supporting		
P	<i>ISB Business Analyst (BA)</i>	In a consultative capacity

Methodology Process Activities

1. The ISB BA would check out the User Acceptance Test Plan from the Ministry SCM repository and provide it to the Program Area Testers who would perform User Acceptance Testing.
2. If any deficiencies are identified by the Program Area Tester, the ISB BA would:
 - Record the deficiency in the Ministry bug tracking tool and notify the ISB Programmer, ISB DBA, ISB BA, and External Developer.
3. If any new change requests are raised, the ISB BA would perform the [Create Change Request](#) process.
4. Steps #2 - #3 would be performed until the Testers are satisfied with the test results.
5. When the UAT is complete, the BA would request the approval of the business area to proceed to Implementation.

3.6.3 Approve start of Implementation (ISB BA)

Purpose

Once User Acceptance Testing has successfully passed, the ISB Business Analyst (BA) and sign-off is given by the Program Area, the ISB BA notifies the project team of the approval to implement the release in Production.

Participants

Participant Type	Participant	Participant Role
P = Primary S = Supporting		
P	<i>ISB Business Analyst (BA)</i>	Notifies the project of the approval to move to Production.

Methodology Process Activities

1. When the release has successfully passed UAT and sign-off has been provided by the Program Area, the ISB BA notifies the project team of the approval to implement the release in Production.

3.7 IMPLEMENTATION PHASE

Purpose

In this phase, the system is placed into production.

Deliverables

Deliverable	Responsibility	M = Mandatory PD = Project Dependent
Implemented System Components	ISB Programmer	M

Deliverable	Responsibility	M = Mandatory PD = Project Dependent
(e.g. Program Code)		
Generated / Updated Database objects (i.e. Oracle System Configuration)	ISB DBA	PD
“Designer Package” This applies only if there are Oracle Designer	ISB DBA	PD
Converted Data	ISB Programmer, DBA	PD
System Release Snapshot This is deliverable is contained in the Ministry ISB Repository.	ISB Release Manager, ISB Programmer	M
User Training	Program Administrator (PA)	PD

3.7.1 Conduct / Participate In User Training (*Program Administrator (PA)*)

NOTE: This process is to be performed on an “as required” basis.

Purpose

The need for user training in using system functions (especially if it is a new system or major enhancements have been done to an existing system) is a critical for a successful system implementation. This is the reason that this process is being highlighted as it is often overlooked or not given the necessary resources for its completion.

NOTE: This process is performed only if there is a major system enhancement or an implementation of a new system.

Participants

Participant Type P = Primary S = Supporting	Participant	Participant Role
P	<i>Program Administrator (PA)</i>	Responsible for ensuring training is provided to the system users.
P	<i>Program Area System Users</i>	Responsible for participating in the training
S	ISB BA	If required in a consultative capacity

Methodology Process Activities

1. Based on the User Procedures, the Program Administrator arranges for system educators to train system users in the use of the system functions.

- When the training has been completed to the satisfaction of the User area, the Program Administrator advises the ISB BA that the system may be implemented into Production.

3.7.2 Conduct / Assist With User Training / Approve Implementation (*ISB Business Analyst (BA)*)

NOTE: This process is to be performed on an “as required” basis.

Purpose

The ISB BA may conduct / assist with the training activity on a project basis and approve system implementation into production when advised by the users that they are ready for the new/enhanced system.

Participants

Participant Type P = Primary S = Supporting	Participant	Participant Role
P	<i>ISB BA</i>	Acts as a consultant to the System User community and approves system implementation into production.

Methodology Process Activities

- The ISB BA may conduct or assist with the system training activity depending on the scope and type of project.
- When the ISB BA receives confirmation from the Program Administrator that the Program Area is ready for the system, the BA would approve to proceed with the implementation.

3.7.3 Implement (Deploy) System (*ISB Programmer*)

Purpose

In this process, the ISB Programmer moves the tested system into the production.

Participants

Participant Type P = Primary S = Supporting	Participant	Participant Role
P	<i>ISB Programmer</i>	Responsible for deploying internally or externally developed system code into the Production Environment
S	External System Developers	If applicable, responsible for performing system code deployment into the Production Environment

Methodology Process Activities

1. If system developed by internal Programmer(s), the Programmer moves system components into the production environment.
2. If system developed by External System Developers, the Programmer ensures that the system components are moved into the appropriate production environment.
3. The Programmer notifies the project team on completion.

3.7.4 Assist With Data Conversion Into Production (*ISB Programmer*)

NOTE: This process is performed on an “as needed” basis.

Purpose

The ISB Programmer loads the database with converted data.

Participants

Participant Type P = Primary S = Supporting	Participant	Participant Role
P	<i>ISB Programmer</i>	Responsible for loading converted data into the Production Database
S	External System Developers	If applicable, may perform the converted data load into the Production Database

Methodology Process Activities

1. Execute the developed software to load the new database with converted data.
2. Notify the ISB BA and ISB Release Manager that the data conversion has been completed.

3.7.5 Implement Database In Production (*ISB Database Administrator (DBA)*)

NOTE: This process would be performed only if there are any database implications.

Purpose

In this process, the ISB DBA moves the tested database objects into the production.

Participants

Participant Type P = Primary S = Supporting	Participant	Participant Role
P	<i>ISB Database Administrator (DBA)</i>	Responsible for setting-up the database in Production environment
S	External System Developers	If applicable, may set up the database in the Production environment

Methodology Process Activities

1. The database objects (including configuration) are moved into the production environment.

3.7.6 Perform Data Conversion Into Production Database (*ISB Database Administrator (DBA)*)

NOTE: This process would be performed only if existing data is to be converted into the new data architecture.

Purpose

If data conversion were required, the ISB DBA would perform the activities to complete this implementation process.

Participants

Participant Type P = Primary S = Supporting	Participant	Participant Role
P	<i>ISB Database Administrator (DBA)</i>	Responsible for executing data conversion functions
S	ISB Programmer	Assists the ISB DBA as required
S	External System Developers	Assists the ISB DBA as required

Methodology Process Activities

1. The DBA executes database functions and/or specific program code to convert existing data into the new data architecture. Since this is a one-time process, the program functionality would be discarded after a successful conversion.

3.8 PRODUCTION PHASE

Purpose

This is a very important phase because this is where project history is recorded. It provides valuable information such as what to repeat, what to avoid, and where something could be improved when developing or enhancing applications in the future. Too often this phase is bypassed and all the valuable experience is lost.

Deliverables

Deliverable	Responsibility	M = Mandatory PD = Project Dependent
User System Acceptance Signoff	PA	M

Deliverable	Responsibility	M = Mandatory PD = Project Dependent
Post Implementation Review Report	BA	PD

3.8.1 Sign-off System Acceptance (Program Administrator (PA))

Purpose

This is a major milestone in the Post System Implementation Phase as it states that the Program Area has officially accepted delivery of the new System Release.

Participants

Participant Type	Participant	Participant Role
P = Primary S = Supporting		
P	Program Administrator (PA)	Responsible for obtaining System Signoff
S	Project Sponsor	Provides System Signoff
S	Program Area Management	Provides System Signoff (as required)

Methodology Process Activities

1. The authorized Program Area management sign-off on the System Release, which is an official acceptance of the system.
2. The Program Administrator provides the ISB BA with a sign-off form, which advises the ISB that the User area has formally accepted the system.

3.8.2 Conduct Post Implementation Review (ISB Business Analyst (BA))

NOTE: This process to be performed for major system enhancements or new systems.

Purpose

This process is initiated by the ISB BA to review the project and record events that were helpful or detrimental during the project. This history is extremely valuable to ensure greater success with future projects.

Participants

Participant Type	Participant	Participant Role
P = Primary S = Supporting		
P	ISB Business Analyst (BA)	Responsible for conducting Post Implementation Review and recording the review results
S	All Project Participants	Participate in Post Implementation Review

Methodology Process Activities

1. Conduct a post implementation review meeting.
2. Document the findings.