**Requirements Development Plan**

[AGENCY NAME]

[PROJECT NAME]

[Publish Date]

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# Using this Template

This template contains “suggested language” and assumes that the author of this document will make appropriate additions, deletions, and changes for their specific project needs.

To create a document from this template:

* Replace [bracketed text] on the cover page, in the header, and throughout the document with your project and agency information by filling in the [bracketed text] area in the document text. Filling in the information once, will propagate that field throughout the document.
* Complete the entire template making all necessary adjustments
* Each section contains abbreviated instructions (**Green Font**) and an example using (**Black Font**).
* Delete this “Using This Template” page.
* Update the Table of Contents by clicking on the “References” tab, selecting “Update Table”, then “Update Entire Table” and click “Ok”.
* Save.

To provide any suggested improvements or corrections, please email TBSM.info@tn.gov

# Revisions

| Revision | Description of Change | Author | Effective Date |
| --- | --- | --- | --- |
| v1 | Initial document upload to TBSM intranet site | BSD Team | 09/28/12 |
|  |  |  |  |
|  |  |  |  |

# Introduction

The purpose of writing requirements is to obtain a thorough and detailed understanding of the business need that is outlined at the beginning of a project and further explored during the project initiation phase. Requirements create a means of communication between stakeholders, executives, and systems development staff in order to create solutions that align with business objectives and serves stakeholders’ needs.

This document outlines a path from project initiation through the point at which a solution will be designed. This document does not provide definitions and examples for every possible tool or technique for defining requirements; however those mentioned in the following paragraph are explored more fully in many books and online resources.

# Description

Requirements analysis includes the tasks and techniques used by a business analyst to examine stated requirements in order to define the required capabilities of a potential solution to fulfill stakeholder needs. It covers the definition of stakeholder requirements, which describe what a solution must be capable of to meet the needs of one or more stakeholder groups.

The requirements package will also describe the behavior of a solution in enough detail to allow a technical team to understand what must be developed. The tasks in requirements analysis apply to both stakeholder and solution requirements.

In addition, requirements analysis may be performed to develop models of the current state of an organization. These models are useful for validating the solution scope with business and technical stakeholders, for analyzing the current state of an organization to identify opportunities for improvement, or for assisting stakeholders in understanding their current state. The current recommendation is to model the current state in “As Is” documentation, and to explore opportunities for improvement and document the future state in “To Be” process models before writing requirements for an automated solution.

The next phase of analysis is to specify and model the business requirements from stakeholder input, using non-technical means of communication. Techniques to gather business information will vary from project to project, as well as, from business stakeholders to a systems development team.

The following tools and techniques for eliciting and modeling requirements are listed in the Business Analysis Book of Knowledge (BABOK):

* Benchmarking
* Brainstorming
* Business Rules Analysis
* Data Dictionary and Glossary
* Dataflow Diagrams
* Data Modeling
* Decision Analysis
* Document Analysis
* Focus Groups
* Functional Decomposition
* Interface Analysis
* Interviews
* Non-functional Requirements Analysis
* Observation
* Organizational Modeling
* Process Modeling
* Prototyping
* Requirements Workshops
* Root Cause Analysis
* Scenarios and Use Cases
* Scope Modeling
* Sequence Diagrams
* State Diagrams
* Survey/Questionnaire
* SWOT Analysis
* User Stories

Once stated requirements are complete, they must be communicated to and approved by stakeholders. It is also important to prioritize which requirements need to be included in a solution in the event the project must be phased for time or financial constraints.

# RASCI Chart

The RASCI chart in the requirements document is used to identify the members of the project team that will be specifically involved in the development of the requirements package. At least one person must be identified as the signing authority; however, some projects will require signatures from both business and system stakeholders. Other responsibilities are outlined in the example that follows.

*Roles played by stakeholders and team members.*

*\* Signing Authority*

*R Responsible for creating the document*

*A Accountable for accuracy of this document*

*S Supports the process*

*C Consulted – provides input*

*I Informed – must be notified of changes*

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Name/Organization** | **Position** | **\*** | **R** | **A** | **S** | **C** | **I** |
| Name of Executive Sponsor | Assistant Commissioner | **\*** |  | **A** | **S** | **C** | **I** |
| Business Analyst | BA |  | **R** | **A** |  |  | **I** |
| Business Stakeholder | Director |  |  | **A** | **S** | **C** | **I** |
| Systems Stakeholder | Development Lead |  |  | **A** | **S** | **C** | **I** |
| External Agency Stakeholder | Director |  |  |  |  |  |  |
| Public Stakeholder |  |  |  |  |  |  |  |

# External References

The external references section is used to identify the location of the repository where the documentation resides.

All documentation for the XYZ project is located:

ag0319006wf512\DE\_CO\_DATA\_DATA\PROJECT\XYZ

Requirements documentation is located:

ag0319006wf512\DE\_CO\_DATA\_DATA\PROJECT\XYZ\Requirements & Design

# Glossary

A glossary is developed at the beginning of a project in order to ensure that all stakeholders have the same understanding of terms being used throughout the process. Additional terms are added as the documentation for the project proceeds through the analysis phase.

If working with the information is more efficient under a separate cover, a Glossary Template is available on the Tennessee Business Solutions Methodology (TBSM) intranet site. If the Glossary template is used, provide information in this section as to the location of the document.

| **Term** | **Definition** | **Aliases** | **Form or Report ID** | **TCA/Federal Law** |
| --- | --- | --- | --- | --- |
| Occupational Safety and Health Administration (OSHA) Injury and Illness Incident Report | The "Tennessee First Report of Work Injury" (FROI) is an allowable substitute for the Occupational Safety and Health Administration (OSHA) 301 form "Injury and Illness Incident Report". OSHA requires employers to maintain a copy of either the First Report or the OSHA 301 on site and available to Tennessee Occupational Safety and Health Administration (TOSHA) representatives. |  | OSHA 301 |  |

# Business Case

The business case describes the justification for the project in terms of the value to be added to the business as a result of the deployed solution, as compared to the cost to develop and operate the solution. The business case may also include qualitative and quantitative benefits, estimates of cost and time to break even, profit expectations, and follow on opportunities. The business case may present expected cash flow consequences of the action over time, and the methods and rationale that were used for quantifying benefits and costs. This provides a framework to demonstrate how the initiative is expected to achieve business objectives. In addition, the business case lists the constraints associated with the proposed project, along with the estimated budget, and alignment with strategies established by the organization.[[1]](#footnote-1) Most of the information for the Business Case will be documented during the State’s Information Systems Planning (ISP) process and may be referred to in this document. This section may be used to describe the location of the ISP document, or provide a cost benefit analysis of the solution as described above.

# Vision Statement

The Vision Statement provides a gateway to further exploration of a project under proposal. The document outlines the current issues, stakeholders’ needs, assumptions, dependencies and constraints. The capabilities section outlines what a solution should include at a high level including potential benefits that can be realized by fulfilling the request. Non-functional requirements are also outlined to give executives a view of items that are considered critical to the success of the project.

If a separate document is desired, a Vision Statement Template is available on the Tennessee Business Solutions Methodology (TBSM) intranet site. Otherwise, the information contained in the Vision Statement should be documented in this section.

# Business Processes

The business processes section is used to describe the organization’s activities from a user-centric perspective to identify those processes which need improvement. Interviews, brainstorming, user stories, use cases, and cross functional flowcharts are some of the techniques used to articulate the events and outcomes of the organization. The first step in business process improvement is to document the way the business operates currently (“As Is”), and then look for opportunities to streamline operations using stakeholder input to identify areas of inefficiency and document a plan for improvement. The next set of business processes will outline the future state (“To Be”) of an organization that will be the basis for creating a solution. The business flows may be too cumbersome to document here, and may just refer to an external location. For smaller projects, the flows may be placed in the following sections.

## AS IS Workflows

“As Is” workflows document the organization’s steps to complete an initiative in the current state. The documentation should eliminate as much of the current automated solution if there is one in order to analyze where the business may be improved for the future. The technique used will be determined by the stakeholder community depending on how well the information communicates to the group.

The following cross functional flowchart describes a high level overview for a business process and is followed by one example of a decomposed process.





## To Be Workflows

To Be workflows are developed after the as-is business processes are vetted for changes to improve efficiency and all business process changes have been approved. The to-be documentation will take the same form as the as-is business process models for consistency.

## Actors

An actor is any person, system, or event external to the system under design that interacts with that system through a use case. Each actor must be given a unique name that represents the role they play in interactions with the system. This role does not necessarily correspond with a job title and should never be the name of an actual person. A particular person may fill the roles of multiple actors over time. [[2]](#footnote-2)

**Business Actors**

| **Department/Position** | **Project Impact** |
| --- | --- |
| Inspector General | * Reduce the cost of performing investigations by eliminating unnecessary paper reporting.
* Increase the ability to provide statistics in a timely manner.
 |
| Director, Investigations | * Increase the accuracy of background check information.
* Increase the ability to store historical information electronically.
* Reduce the risk of losing legacy knowledge of software systems.
 |
| Director, Child and Adult Care Licensing | * Increase statistical reporting.
 |
| Program Managers Coordinators and Staff, Licensing | * Increase access to public information electronically.
 |
| Program Monitor, Licensing | * Reduce the amount of time to process a legal referral.
* Improve efficiency in generating notifications to employers and employees.
 |
| Special Investigator | * Decrease the amount of time it takes to perform a background check.
* Decrease the need to publish paper documentation.
* Improve communications between Investigations and Licensing by improving the legal referral process.
 |
| Clerk 3, Investigations | * Increase performance by eliminating batch processes where possible.
* Increase efficiency in processing monthly invoices.
 |
| Programmer Analyst and Distributed Computer Operator, Investigations | * Create the ability to customize drop lists through a user interface, eliminating the need for program modifications for lists of values.
* Improve ability to respond to changing demands by bringing the technology to current industry standards.
 |
| Field Supervisors, Licensing | * Decrease the amount of time it takes to gain access to information by creating user interfaces with additional options.
* Improve accuracy of employer/employee lists.
 |
| Program Evaluators, Licensing | * Increase accuracy in the relationships between employees and their employers
 |
| Accounting Tech, Fiscal Services | * Decrease the time it takes to reconcile the monthly invoice for payment.
 |
| Department of Human Resources | * Increase accuracy of notifications by associating a scan result to a specific department within an agency.
 |
| Director, Fiscal Services | * Improve efficiency in processing monthly invoices.
 |
| Director, Internal Audit and Auditor | * Decrease time in researching historical data.
 |
| State Employees | * Decrease response time for a background and registry check.
 |

**External Organizations**

|  |  |
| --- | --- |
| **External Organizations** | **Project Impact** |
| Employers | * Decrease response time for a background and registry check.
 |
| Private Sector Employees | * Decrease response time for a background and registry check.
 |

**Systems**

|  |  |
| --- | --- |
| **External System** | **Project Impact** |
| Morpho Trust – Fingerprint Vendor | * Improve processes by using current technology (bringing technology in line with other agencies and states.)
 |
| TBI | * Improve processes by using current technology.
 |
| Department of Health | unknown |
| Department of Children’s Services | unknown |

## Business Use Cases

Business Use Cases are developed to document business services and processes showing the relationship between any entity that interacts with the organization (actors) and a specific business function. Business use cases can be used during business process improvement efforts to help determine the impact on business processes and roles within an organization, and can be used to help develop system use cases for an IT solution.

In the initial stages of a solution, whether process improvement or IT, business use cases, along with the process of visually modeling the business, are developed. During high-level modeling, business use cases can be written in a brief format, eliminating some of the granular detail until the modeling matures to the lowest functional breakdown of a process. Additional tools and techniques such as business process modeling, functional decomposition, and activity diagramming may be used in conjunction with forming business use cases. This section may refer to a repository where business use cases are stored as they may be too voluminous to include in this document. Before beginning the use case effort it is advisable to create a numbering sequence that may be traced throughout the project.

For additional information, refer to the Business Use Case Template located on the Tennessee Business Solutions Methodology (TBSM) intranet site.

## User Stories

User stories are a high-level, informal description of a solution capability that is used to provide information for the estimation of implementation time. The stories are examples of where a solution provides value to the stakeholder and should be written in brief two or three sentence paragraphs.

A person who wants to work at a day care goes to a fingerprint location to have their fingerprints submitted to the TBI in order to complete a background check. The fingerprint information and the TBI information are combined to open an investigation to make an employment determination. The employer receives a letter stating the outcome of the investigation.

## Business Rules

Purpose: To define the rules that govern decisions in an organization and that define, constrain, or enable organizational operations.

Description: Policies and rules direct and constrain the organization and operation of an organization. A business policy is a non-actionable directive that supports a business goal. A business rule is a specific, actionable, testable directive that is under the control of an organization and that supports a business policy.

A number of basic principles guide the process of stating and managing business rules. The business rules should be:

* Stated in appropriate terminology to enable domain SMEs to validate the rules
* Documented independently of how they will be enforced
* Stated at the atomic level and in declarative format
* Separated from processes that the rule supports or constrains
* Maintained in a manner that enables the organization to monitor and adapt the rules as the business policies change[[3]](#footnote-3)

Before embarking on capturing business rules it may be helpful to create a numbering scheme such as BR001, etc. so that the rule may be referred to in documentation that will be created in other processes such as system specifications.

BR0001 All day care workers must clear a background check before they are employed.

For an example of the suggested information needed for capturing business rules, refer to the Business Rule Matrix Template located on the Tennessee Business Solutions Methodology (TBSM) intranet site.

# System Requirements

System requirements are comprised of all the components necessary to create a solution that will meet stakeholders’ needs and organizational objectives. The types of requirements that must be defined are:

* Functional Requirements – the steps necessary for a stakeholder to complete an action to achieve an organizational objective. Functional requirements bridge the gap between business requirements, business rules and the system under discussion.
* User Interface Requirements – displays the information and actions that a proposed solution will present to the user in the solution to be built. When prototypes are developed and presented to users for approval, the development team will gain a more in-depth understanding of the solution to be constructed and also serves as a type of contract between the stakeholders and development to ensure the solution meets the stakeholders’ needs.
* Data Requirements – are expressed with data dictionaries, entity relationship diagrams, class diagrams and other rules to describe the information that must be stored and the interactions and cardinality between entities.
* Security Requirements – describes what must be done to assure the security and integrity of a system’s data. Examples of security requirements may be defined at varying levels of abstraction from defining which user groups may work with particular data, the enforcement of database integrity, authentication and authorization procedures and best practice policies with regard to test data.

## Functional Requirements

Functional requirements are stated in terms that can be validated by stakeholders at all levels of the organization and describe a product’s capabilities or things the product must do for its users. The following outline proposes a possible way to decompose requirements in an easily understandable format.

The requirement id can be assigned in an outline format and preceded by the type of requirement for easier recognition and tracing through the requirements traceability matrix, i.e. FR for Functional Requirement, BR for Business Rules, SU for system use case, etc.

| **Requirement ID** | **Business Area**Steps | **Business Use Case ID** | **Business Rule ID(s)** | **User Name** | **Date Approved** |
| --- | --- | --- | --- | --- | --- |
| **FR 1** | **Fingerprinting** |  |  |  |  |
| FR1.1 | The fingerprint vendor processes the employee scan. |  |  |  |  |
| FR1.1.1 | The fingerprint scan is sent to TBI for verification. |  |  |  |  |
| FR1.1.2 | The fingerprint scan is sent to the agency. |  |  |  |  |
| FR1.2 | The TBI processes the fingerprint. |  |  |  |  |

## Requirements Traceability Matrix

The requirements traceability matrix is used to track requirements throughout the process and to show the relationship from the user’s requirements to software component to testing and verification.

For additional information, refer to the Requirements Traceability Matrix document located on the Tennessee Business Solutions Methodology (TBSM) intranet site.

## User Roles

Actor roles are defined during the business use case process to indicate a general category of individuals performing a specific process; however, when the system under discussion is in the process of being defined it may be helpful to list the job roles that will interact with the solution prior to beginning the system use cases (or other system requirement technique) in order to consider potential security requirements throughout the solution. The system role in the matrix below is determined during the system design phase.

|  |  |  |
| --- | --- | --- |
| **Job Role Description** | **Interaction With Proposed System?** | **System Role** |
| Investigations - Inspector General | Yes | Investigations Director |
| Investigations - Investigations Director | Yes | Investigations Director |
| Investigations - District Director | Yes | Field Investigator |

## System Use Cases

System Use Cases are developed to describe interactions between an actor and an IT solution where a scenario may be completed in one session.

During high-level design sessions, system use cases can be written in a brief format, eliminating some of the granular detail until the modeling matures to the lowest functional breakdown of a functional requirement. Additional tools and techniques such as user interface prototyping, data flow diagramming, attribute table development, and activity diagramming may be used in conjunction with forming system use cases.

During the formation of system use cases, it is important to reference the system use case id back to the requirements traceability matrix to ensure coverage of all functional requirements.

For additional information, refer to the System Use Case document located on the Tennessee Business Solutions Methodology (TBSM) intranet site.

## Activity Diagrams

An Activity Diagram is a *model* that illustrates the flow of processes and/or complex use cases by showing each *activity* along with information flows and concurrent activities. Steps can be superimposed onto horizontal *swim lanes* for the roles that perform the steps. [[4]](#footnote-4) Activity diagrams provide a pictorial view of the information in a system use case. This technique is helpful in communication with system development staff in order to see the main path and exceptions as well as to provide additional information on complex decisions and algorithms.

The following example describes a search feature and the options a user needs once an investigation is searched. The rake or fork symbol denotes another activity diagram connects to the process that is named.



## User Interface Requirements (Prototyping)

User interface requirements may be defined through various tools. Prototyping with screen mock ups is a useful way to communicate the design of a system from a user’s perspective and may also reveal additional requirements not captured in an earlier phase. Defining and gaining acceptance of user interface requirements before constructing the solution can be time and error saving in the long run.

The following is an example of a search screen prototype.



## Data Definition

Defining data needed for a solution may begin with collecting attributes the stakeholders need during the initial phases of discovery. When writing functional requirements and prototyping, attributes can be collected and defined in a data dictionary that will be used to help design the data solution. The following are examples of methods used to collect information about a solution’s data requirements.

### Dataflow Diagrams

A data flow diagram is a model that depicts both processes and data stores and the flow of information between them. Dataflow diagrams are not meant to collect attributes, but help to describe the movement and transformation of information throughout different processes.



### Data Dictionary

A data dictionary is a collection of attributes grouped by domain that is used to describe data needs of the system.

For additional information, refer to the Data Dictionary document located on the Tennessee Business Solutions Methodology (TBSM) intranet site.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Aliases** | **Values/Meanings** | **Description** | **Where Used** |
|  |  |  |  |  |

### Multiplicity Rules

A multiplicity rules chart provides information to the design team to describe cardinality and constraint information for the domains described in the data dictionary.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Each (Entity)** | **Association** | **At least…** | **Maximum** | **Each (Entity)** |
| Agencies | are referenced by |  |  | Excludable Legal Categories |
| Agencies | are referenced by |  |  | Investigations |
| Agencies | are referenced by |  |  | Notification Templates |
| Agencies | are referenced by |  |  | Programs |
| Agencies | are referenced by |  |  | Registry Configurations |
| Agencies | own | 0 or 1 | or more | Excludable Legal Categories |
| Agencies | own | 0 or 1 | or more | Investigations |
| Agencies | own | 0 or 1 | or more | Notification Templates |
| Agencies | own | 0 or 1 | or more | Programs |
| Agencies | own | 0 or 1 | or more | Registry Configurations |

### Entity-Relationship Diagram

An entity relationship diagram is a graphical representation of the domains, attributes, and relationships that are relevant to a problem domain.



## Other Requirements

There are other types of requirements that need to be considered for a complete requirements package and may vary from project to project. The following is a list of other items to consider:

* Reporting
* External Interfaces
* Security
* Conversion

## Non-functional Requirements

Non-functional requirements specify criteria that are used to judge the operation of a system rather than functional requirements that describe the processes and behavior of a system. Some examples are auditing, accessibility, availability, backup, disaster recovery, etc.

* Activity Logging
	+ Record the date, time, and user who created a record.
	+ Record the date, time, and user who updated a record.
* Accessibility Requirements
	+ Screens will be designed to include colors that are compliant with ADA standards.

## Architectural Requirements

An architectural requirement describes environmental or platform needs for a particular solution.

The system under discussion requires:

* The latest release of an Oracle database, currently 11g at the time of this writing
* The platform will be Java using the JBoss Enterprise Edition
* All interface files will be processed using the ETL tool Talend Studio.

# Acceptance

(This section should be modified for best application to specific projects. Include all project team members that should have some level of authority regarding document review and approval.)

Approved by:

 Date:

<Approvers Name>

[PROJECT NAME] Executive Sponsor

 Date:

<Approvers Name>

[PROJECT NAME] Business Sponsor

 Date:

<Approvers Name>

[PROJECT NAME] Project Director/Manager

 Date:

<Approvers Name>

[PROJECT NAME] Stakeholder

1. A Guide to the Business Analysis Body of Knowledge, Version 2.0, International Institute of Business Analysis, 2009 [↑](#footnote-ref-1)
2. A Guide to the Business Analysis Body of Knowledge, Version 2.0, International Institute of Business Analysis, 2009 [↑](#footnote-ref-2)
3. A Guide to the Business Analysis Body of Knowledge, Version 2.0, International Institute of Business Analysis, 2009 [↑](#footnote-ref-3)
4. A Guide to the Business Analysis Body of Knowledge, Version 2.0, International Institute of Business Analysis, 2009 [↑](#footnote-ref-4)