**P20W Statewide Longitudinal Data System**

**Master Project Plan**

**Prepared for**

**Commonwealth of the Northern Mariana Islands**

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# 1.0 Executive Summary

The Master Project Plan presents an overview of DBDriven’s strategy for the Commonwealth of the Northern Mariana Islands’ Pre-Kindergarten through Workforce Statewide Longitudinal Data System (CNMI P20W SLDS). This document will provide CNMI stakeholders with DBDriven’s overall approach to project management and will establish project expectations regarding communications, risk identification, training, implementation, quality assurance, change management, and testing. The Master Project Plan is divided into chapters that represent common project management practices.

The Master Project Plan may be modified to include changes as requested by CNMI stakeholders and the CNMI P20W SLDS Project Manager. This document includes a document history on page iii that will contain updates to sections of the Master Project Plan over the course of the project life cycle, should they be deemed necessary by the DBDriven Project Manager, the CNMI P20W SLDS Project Manager, and/or CNMI stakeholders. Initial delivery, document revisions, and final delivery of the Master Project Plan will be recorded in the document history section.

# 2.0 Implementation Approach, Strategy & Design

This document details the overall approach, strategy, and schedule for the CNMI P20W SLDS project. This plan will be used by DBDriven and CNMI during the design, specification, construction, implementation and support of the CNMI P20W SLDS.

The CNMI P20W SLDS project will draw on prior DBDriven demonstrated successes with other consortium members but will also include new capabilities for CNMI.

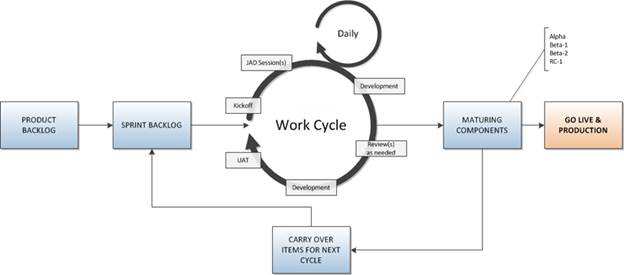
As stipulated in the CNMI PSS Contract Number 165567, the budget for the CNMI P20W SLDS project is not to exceed $1,921,181.00. All aspects of this project will be managed in accordance with this budget. The project will be completed by January 1, 2023.

Because this is a high-level project plan, all details and specifics requirements will be addressed in the System Requirements Specification Document and the Microsoft Team Foundation Server (TFS). The Project Schedule will be updated as the project progresses.

## 2.1 Approach and Strategy

This project will use an adapted agile methodology. In general, the adapted agile methodology will deliver an updated build every four weeks. Builds will involve the team working through the full software development life cycle including planning, requirements, design, development, unit and system testing.

The methodology will emphasize face-to-face, virtual and phone communications as able and stakeholder feedback on requirements gathering. It is expected that there will be three releases during the execution phase of the project. The CNMI P20W SLDS will be released into production following the completion of all phase specific work cycles and a comprehensive User Acceptance Test (UAT).



*Figure 1 - Adapted Agile Methodology*

### 2.2 Major Deliverables

The following deliverables are considered major deliverables for the CNMI P20W SLDS project:

1. CEDS Aligned Data Warehouse
   1. Centralized data warehouse
   2. CEDS Aligned
   3. PK12 data sources
2. Early Warning System
   1. Agency tool to identify at risk individuals
3. Reports
   1. EdFacts Reporting tool
   2. Multiple CNMI Specific Reports
4. P20W Solution
   1. P20W Portals
   2. Non- PK12 Data Source (e.g. Workforce, Social Services, Health, etc)

These will be delivered based on the following phased approach:

* Phase I:
  + SLDS: CEDS Aligned Data Warehouse
  + Reports
  + EdFacts Automation
  + P20W Solution
* Phase II:
  + Early Warning System
* Phase III
  + P20W data source onboarding

Phase I and Phase II are expected to have some concurrent development, testing and implementation efforts from June – September 2022 (anticipated).

## 2.3 Solution Components & Design

The CNMI P20W SLDS project has identified ten system components, which when developed and integrated, will meet the project goals. The total scope of the project includes the development of the ten components. These components are outlined as follows:

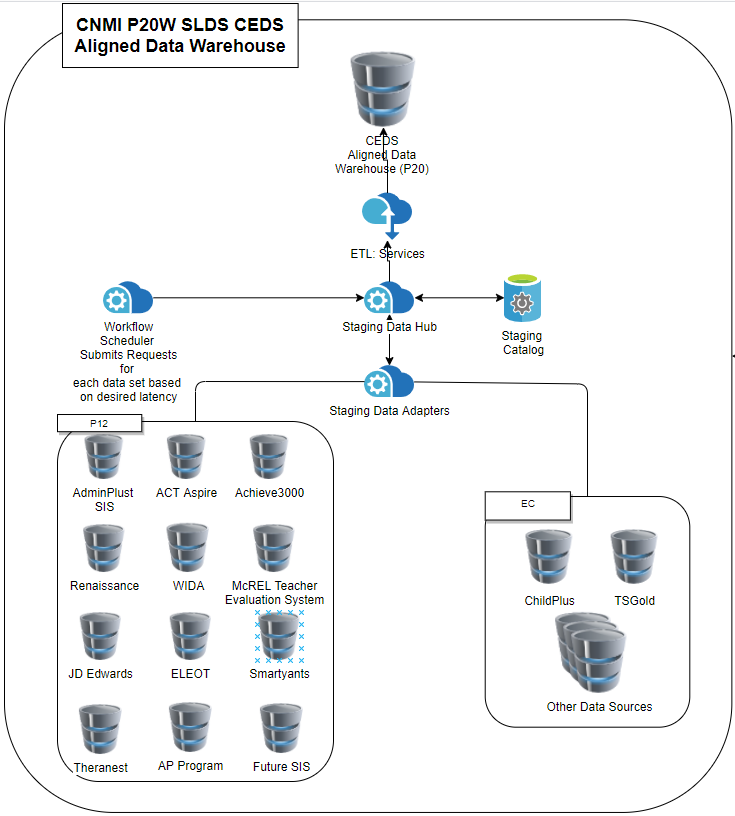
### 2.3.1 CEDS Aligned Data Warehouse

The CEDS aligned P20W SLDS Data Warehouse will be a cloud hosted solution that is able to connect to data where it is located (e.g. on-premise,/private cloud, cloud, etc).

The CEDS Aligned Data Warehouse will be a centralized source warehouse containing identified assets for CNMI, including Pre-Kindergarten through 12 data. The technical design of the data warehouse is further defined in the Technical Design documentation (incorporated in a separate deliverable).

The CEDS Aligned Data Warehouse will provide ETL services, including an ETL interface to onboard future data sets without requiring code changes to the existing warehouse.

The logical architecture of the CEDS Aligned Data Warehouse is below:



*Figure 2- CEDS Aligned Data Warehouse Logical Architecture*

### 2.3.2 Researcher Portal

The CNMI P20W SLDS Researcher Portal provides numerous functions for both public (anonymous) users and named users (authorized agency personnel and researchers). The front door into the CNMI P20W SLDS is through the portal for all researchers and the public.

The portal will be the gateway between the users and the CNMI P20W SLDS solutions. The portal component will fulfill the following business needs:

* Intuitive User Interface (UI)
* Help and training information
* Support for all common web browsers
* Support User Account Management
* Expose metadata (Data Dictionary)
* Build data request (ad hoc query tool)

The portal serves both public and named users. Named users gain access after they have requested an account, and their request has been approved by the appropriate agency (ies) at designated control points. The approval process incorporates procedures required to meet state and federal legal and regulatory requirements for access to restricted data.

The portal supports a configurable governance process that will be extended to CNMI P20W SLDS.



*Figure 3- Configurable Governance*

### 2.3.3 Agency Governance & Workflow Portal

The Agency Governance & Workflow Portal component serves as the central nervous system for the CNMI P20W SLDS solution. It manages the full spectrum of account, data, document and user management. It includes automated workflows and auditability. Workflow monitors and triggers actions such as query submission and maintains status of requests. Moreover, workflow is the source of information about roles and permissions for authorized users. All business administration and governance of the system is executed through the CRM application. The system tracks all communication and activity within the system including all emails, approvals, data access and use policies, request for data and results downloads.

The workflow component provides automation and monitoring of user actions, including creation, submission transport, notification, approval or rejection of account and data requests. The workflow component provides email notifications for new, pending and completed requests. The workflow component fulfills the following business needs:

* Provides for account management (portal(s) user)
* Provides for Research Purpose creation
* Provides email alerts & reminders
* Provides ability to attach documents
* Provides ability to log account activity (Security)
* Ability to manage roles and permissions (Security)
* Supports governance process (es)

### 2.3.4 Reporting Solution Portal

The Reporting Solution Portals will accommodate both public (anonymous) users and the agency (internal) users. The public portal will fulfill the following detailed business needs:

* Provide a Business Intelligence (BI) capability to PSS
* Create longitudinal, aggregate level reports for the public
* Ability for authorized users to build queries for record level data from one or more agency databases
* Ability to suppress cell values within reports
* An intuitive User Interface (UI)
* Support for all common web browsers (Edge, Chrome, Firefox, Safari)
* Expose longitudinal reports to the public (Reporting)
* Provide links to reports on Agency websites
* Provide information regarding the CNMI P20W SLDS, to include Agency Points of Contact, News Releases, Upcoming Events, and other material deemed publicly releasable by the CNMI Working Group

The Private Reporting Solution Portal will fulfill the following detailed business needs:

* Named User management
* Provide a Business Intelligence (BI) capability to PSS
* Create longitudinal, aggregate level reports for the public
* Ability for authorized users to build queries for record level data from one or more agency databases
* Ability to suppress cell values within reports
* An intuitive User Interface (UI)
* Support for all common web browsers (IE, Chrome, Firefox, Safari)
* Expose longitudinal reports to the private (Reporting)
* Provide links to reports on Agency websites

### 2.3.5 Security

Security, although recognized as one of the ten components, is built into all other components of the CNMI P20W SLDS. The sensitivity of the information and policies regarding who and how data are handled will be implemented through a cohesive Security model that is centrally managed by the workflow component. The CNMI P20W SLDS uses a role-based security model. With the exception of the public facing website, all CNMI P20W SLDS users must authenticate themselves using a username and password.

Authentication, or verification of the identity of a user, is required for all named users, to include agency employees and agency-approved researchers. Researchers and agency employees will be authenticated as a precondition to gaining access to the named-user portions of the CNMI P20W SLDS portal. Additionally, agency employees will be authenticated before gaining access to the workflow component of the CNMI P20W SLDS.

Authorization defines user roles and the permissions associated with those roles.

Security will be handled at two levels:

* **User level** – Named users will be authenticated against a trusted source. User permissions will be based on approved authorizations.
  + Authentication
  + Authorization
    - Role-based
    - Permissions
* **Data level** – Data security will be enforced by all components.
  + Portal
  + Data Dictionary
  + Reporting –
    - Suppressed data (record size <10 or <5 not shown)
  + Database
  + Workflow

The Security component will fulfill the following detailed business needs:

* Ability to log account activity
* Ability to manage user accounts
* Ability to manage component access
* Ability to manage data access
* Enforcement of roles and permissions
* Enforcement of data security at three levels. First level is record level data; second level is aggregated data that has been suppressed to meet the minimum cell value; and third level is aggregated data, which has not been suppressed.

All data elements are secure throughout the system. All sensitive data at rest and in transit will be secured and encrypted.

### 2.3.6 Data Dictionary & Selection Tool (DDST) and Data Request Tool (DRT)

The Data Dictionary and Selection Tool (DDST) is available to named users in the Researcher Portal. It provides a complete inventory of available data, data source(s), the structure of available data, the possible values and meanings of the information stored. It allows researchers to select the tables and columns of data they want access to as part of their research.

The DDST component fulfills the following business needs:

* Ability to provide users with metadata about available agency data
* Support the central storage and viewing of business rules related to data
* Support creation of data queries (Reporting)
* Alert data administrators of changes (Workflow)

The Data Request Tool (DRT) is an ad hoc query capability which allows users to design, develop and save data requests. The Data Request Tool is accessible to named users from within the Researcher portal. At the fundamental level, the DRT allows researchers to define the columns of the data they are requesting, the filters that apply to their requests, and whether the result (s) should or should not include matched or unmatched data.

### 2.3.7 Data Manager

The Data Manager is an inventory of every available data field in every available data source, the structure of their storage, the possible values and meanings of the information stored. The Data manager provides a friendly web interface for adding/deleting/modifying agencies, tables, columns and valid values.

### 2.3.8 Data Hub (DH) and Data Adapter (DA)

The CNMI P20W SLDS Data Hub (DH) is responsible for querying disparate data sources, matching the records in a de-identified manner, creating final de-identified data sets, and communication with the workflow solution. To execute these tasks successfully, the DH understands the structure of the data sources and the relationships between them.

The DH uses the Data Manager to obtain this structure and relationship information. In querying the agency data sources, the DH has responsibility for dividing the submitted query into smaller queries (sub-queries) and devising an optimized plan of execution that can be executed against each target data source.

For data results, the Data Hub is responsible for replacing the USPI with a non-identifiable ID before returning

results to the researcher. Upon successful record joining, the USPI is replaced with a hash of the USPI. This

hashed USPI cannot be traced back to the original data source(s). Upon successful creation of the de-identified

data set, workflow is notified of the status and location of the file. All pertinent parties (e.g., researchers) are

notified via email that the data is available for download via the Researcher Portal or workflow component.

The Data Hub component will fulfill the following detailed business needs:

* Ability to query disparate databases
* Ability to link/join records
* Ability to de-identify records

### 2.3.9 Matching Engine

The Matching Engine is responsible for matching records across the agency databases and creating the USPI. The output of the matching engine is the crosswalk table identifying each unique individual within the CNMI P20W SLDS agency sources.

The Matching Engine component will fulfill the following detailed business needs:

* Ability to deterministically and probabilistically match records
* Ability to establish thresholds for probabilistic matching
* Ability to create USPIs

### 2.3.10 Data (SLDS Database Management)

In addition to the agency data sources exposed to the CNMI P20W SLDS, there are numerous supporting databases within the CNMI P20W SLDS. Even though the end product is driven by the primary agency data sources, the supporting databases are critical to the implementation of the CNMI P20W SLDS. These supporting databases are essential to other components and capabilities, such as reporting, Data Hub, workflow, logging, auditing, etc.

The Data Hub process will use its database to temporarily store de-identified linked record-level data. The temporary tables may be archived if this is determined to be a requirement, but the temporary tables will not be stored in a manner that makes them readily accessible for queries or reports. For pre-built reports, stored procedures in a database will be used for data querying and suppression of small cell sizes.

The Data component will fulfill the following detailed business needs:

* Ability to store data
* Ability to retrieve data

# 3.0 Schedule

Major Milestones of the CNMI P20W SLDS project include, but are not limited to:

* Project Kickoff – *April 19, 2021*
* Project Plan & Requirements Documentation – *July 2021*
* Technical Design Documentation – *September 2021*
* Environment Configuration – *October 2021*
* Data Warehouse Go-live– *February 2022*
* Reports – *February – September 2022*
* P20W Solution Go-Live – *September 2015*
* Early Warning System Go Live– *December 2022*
* P20W Data Set Onboarding & Performance Tuning- *January – December 2023*

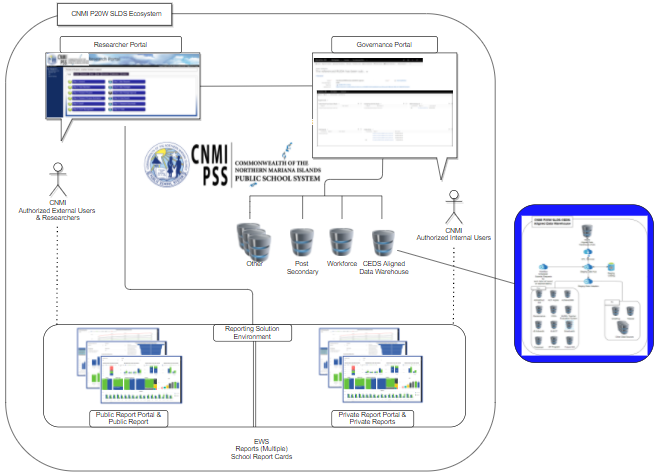
A kick-off meeting will precede each build cycle and stakeholder review/feedback sessions will occur approximately every three weeks during a build cycle.

# 4.0 Architecture Design

Detailed Technical Design and Architecture diagrams will be delivered via the Technical Design Documentation deliverable. This document will be incorporated into the Project Plan as a future appendix.

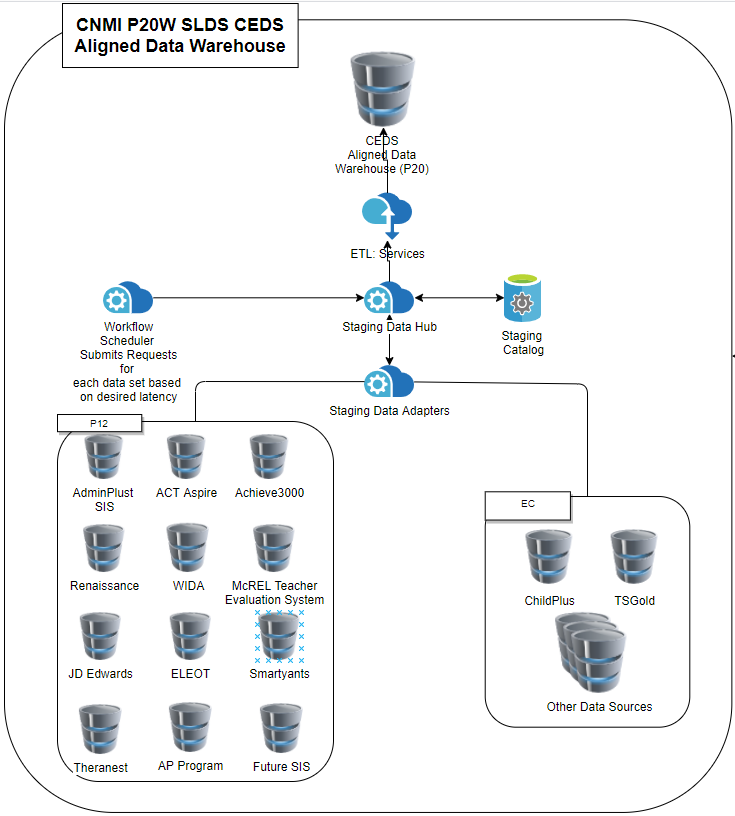
Phase I and Phase II have dedicated requirements gathering and planning phases associated. Requirements will be completed during that phase and incorporated into the project plan as future appendices.

The comprehensive solution ecosystem to be delivered is depicted in the following logical architecture diagram / CNMI P20W SLDS ecosystem diagram:



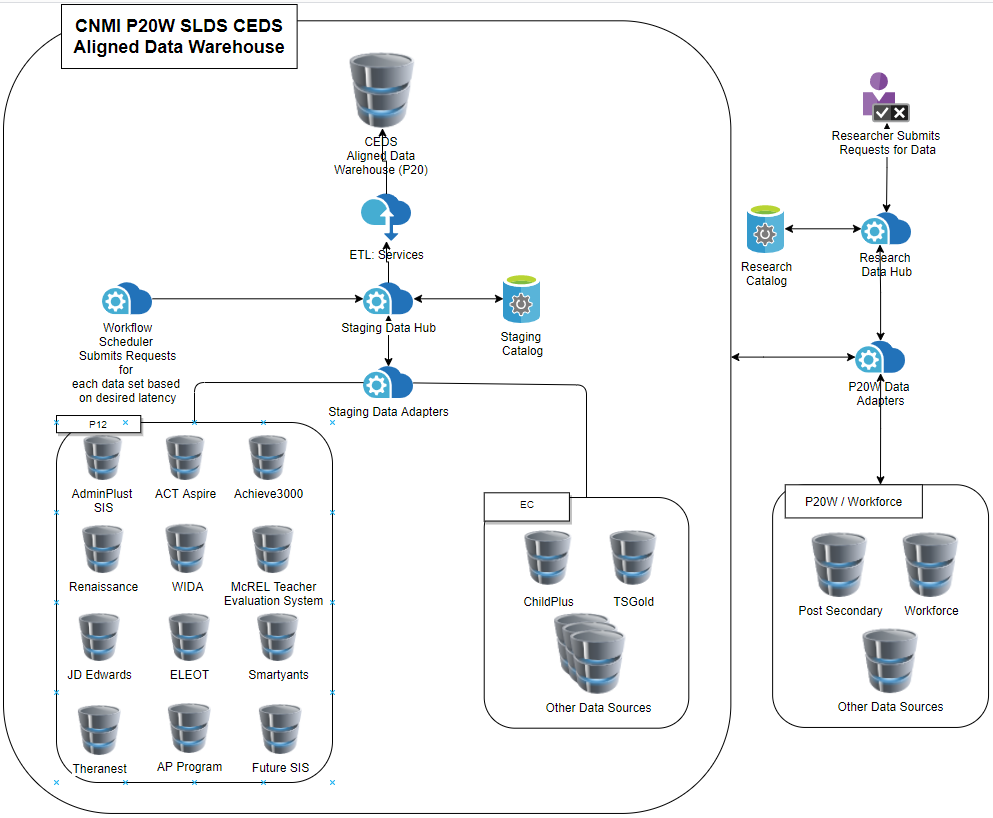
*Figure 4 - CNMI P20W SLDS Solution Ecosystem*

CNMI P20W SLDS CEDS aligned data warehouse (SLDS) logical architecture is as follows:



*Figure 5 - CEDS Aligned Data Warehouse Logical Architecture (SLDS)*

CEDS aligned data warehouse (SLDS) and P20W researcher portal logical solution architecture:



*Figure 6- CNMI P20W SLDS High Level Architecture (P20W SLDS)*

# 5.0 Change Management Plan

The purpose of the Change Management Plan (CMP) is to describe how change management (CM) will be conducted throughout the CNMI P20W SLDS project and to ensure that changes are within the scope, budget, and timeline for the original CNMI P20W SLDS proposal. The CMP includes the documentation of how CM is managed, the roles and responsibilities, and how change request (CR) changes are: identified and submitted, approved and implemented, and documented and communicated.

A coordinated CMP is necessary to effectively manage change in the CNMI P20W SLDS project. This plan establishes CM roles and responsibilities and describes how the CNMI P20W SLDS team will track, implement, and communicate change requests (CR) throughout the project life cycle.

## 

## 5.1 Definitions

Change Request (CR) – A documented, requested change containing details for adjustment/modification to a component or tool of the CNMI P20W SLDS. Examples include: CEDS Aligned Data Warehouse (SLDS), Workflow, Portal, Data Adaptor, Matching Hub, Lexicon, Data Request Tool, Data Dictionary & Support Tool, Exposure Databases, Team Foundation Server, and Google Drive.

Change Items (CI) – A CR that has been approved to enter the Change Control Process.

Change Management Database (CMDB) – A tool for managing change control. Microsoft Team Foundation Server (TFS)

Microsoft Team Foundation Server (TFS) – A Microsoft program that will be utilized as the CMDB for the CNMI P20W SLDS Project.

Work Item – A documented requirement or change in TFS. Work item types include: Features, User Stories, Tasks, Test Cases, Bugs, and Issues.

## 

## 5.2 Roles and Responsibilities

This section identifies who owns responsibility for specific tasks and how they are communicated to all the project stakeholders.

**DBDriven Project Manager – Peggy Feldmann**

The DBDriven Project Manager may approve any change requests that will have no negative impact to project cost or schedule. The DBDriven Project Manager is required to notify the CNMI P20W SLDS Project Manager for any approved change requests. The DBDriven Project Manager requires formal submission of a change request through the CNMI PSS approved change request form.

**CNMI SLDS Project Manager – TBD**

The CNMI P20W SLDS Project Manager may approve any change requests that will have no impact to project cost or schedule after consultation with CNMI Working Committee. The CNMI P20W SLDS Project Manager may also approve change requests as approved by CNMI Working Committee and/or the CNMI P20W SLDS Project Director. Any change requests approved by the CNMI P20W SLDS Project Manager require formal submission of a change request through the CNMI approved change request form.

**CNMI SLDS Project Director – Annette Pladevega**

The CNMI Project Director is the signing authority on the change requests approved by the working committee. Any change requests signed by the CNMI SLDS Project Director require formal submission of a change request through the CNMI approved change request form and approved by the Working Committee.

**CNMI Working Committee**

The CNMI Working Committee may approve any change requests that have any impact to project cost or schedule. Any change requests approved by the CNMI SLDS Working Committee require formal submission of a change request through the CNMI approved change request form.

## 5.3 Change Control Process

Change Control is the process of systematically controlling and managing all steps of change. In order to effectively handle project CM, it is important to establish and use a process, which ensures only necessary changes are made. This is especially important during the development phase of the project life cycle. Additionally, like any change management efforts, change decisions must be made with an understanding of the impact of the change, including cost, schedule and performance.

The CNMI P20W SLDS will use a standardized change control process to ensure all CIs are handled in a consistent manner and all changes are fully vetted and communicated.

All CRs will be submitted by filling out Appendix A (Change Request Form) and submitting it to the DBDriven Project Manager. The DBDriven Project Manager will enter the CR into the CMDB in a “proposed” status. CRs will be classified as a Change Request, Bug or Issue. The CR will then be assigned to a developer for determining complexity, cost and schedule estimates.

Many times, a CR will have a relationship with one or more other CRs. The Developer, DBDriven Project Manager, and CNMI Project Manager will work together to ensure these relationships are fully understood and communicated. The Developer and DBDriven Project Manager will then be responsible for illustrating these relationships and co-dependencies in the CMDB to ensure a full understanding of each CR and how each relates to another. CRs with direct relationships may be packaged together.

Any changes must be captured in a CR and entered into the CMDB. The DBDriven and CNMI P20W SLDS Project Managers will review, analyze, and submit and seek for appropriate approval/denial based on the priority, impact, scope, time, and cost of the proposed change. If the change is approved, the CR will be changed to an “active” state, become a CI, and be assigned to the Development Team in the CMDB. Denied CRs may be “closed” or they may remain “proposed” and reevaluated with additional or new information.

The DBDriven Project Manager will maintain a master log of all change requests and the resolution of each request. All requests will be maintained in a Change Control Log that will be made available to the CNMI P20W SLDS Project Manager. A sample Change Control Log is included in Attachment B.

### 5.3.1 Change Management Database (CMDB)

A Change Management Database (CMDB) will be used to store the CNMI SLDS change information. CMDB is a term, which originates from Information Technology Infrastructure Library (ITIL), which provides a framework for best practices in IT services management. The CMDB contains not only the change information for assets but also information about requirements, tasks, and the source code itself.

The CMDB will be the centralized repository for all change information for the CNMI P20W SLDS. The CMDB provides a common platform for the stakeholders and developers to edit, change, revise, and update CIs and CRs.

The CMDB will provide assurance that members of the Project Team are always working off of the latest version of software, data, and documentation. As CIs are changed and updated, the Developer and Project Coordinator will be responsible for updating the status of the CI.

Microsoft’s TFS will be used as the CMDB for the CNMI P20W SLDS.

### 5.3.2 Change Status Accounting

Accounting for the status of the change involves the collection, processing, and reporting of the change data for all CIs and CRs at any given time. This also includes management stored change information held in the CMDB. This may include approved change documents, software, data, and their current version numbers; build reports; status of any submitted changes; or any discrepancies and status identified through change audits.

Prior to any new software releases, the Project Coordinator will work with the Developer to ensure all CRs have been documented, tested, and approved.

The Project Coordinator will submit CM monthly status reports to the CNMI P20W SLDS Project Manager.

# 6.0 Communications Management Plan

The Communications Management Plan establishes the communications framework for the CNMI P20W SLDS project. This plan will serve as a guide for handling communications with internal and external stakeholders throughout the project life cycle. This plan identifies and defines the roles and communications responsibilities of all project stakeholders, as well as timelines for project communications, internal communication updates, communication escalation procedures, and communications workflow/organizational chart.

Appendix C of this document includes a Project Status Report template and details regarding project updates and milestones. In addition, the project meeting guide details communications rules and provides an overview of how meetings will be conducted to ensure maximum productivity and efficiency.

This chapter also provides DBDriven’s plan for the generation, documentation, storage, transmission, and disposal of all project information. This document includes policies and procedures for the proper handling of all project-related information, internal and external communications, and project deliverables.

## 

## 6.1 Communications Management Approach

The DBDriven Project Manager will take a proactive role in ensuring effective communications on the CNMI P20W SLDS project, both with internal and external project stakeholders. The communications requirements for all relevant project communications are documented in the Communications Matrix section of this document. The Communications Matrix provides all CNMI P20W SLDS project stakeholders with a guide for all information necessary to communicate, parties responsible for various types of communications, timelines for communications, and the parties to whom communications are delivered.

Throughout the project, changes and updates to the Communications Management Plan may be required as a result of changes in:

* Personnel
* Addition of internal/external stakeholders
* Project scope
* Budget

Updates may also be required as internal and external project stakeholders identify additional communications requirements and/or revisions to internal and external communications workflow.

The DBDriven Project Coordinator is responsible for managing all proposed and approved changes to the Communications Management Plan. All changes must be proposed and approved in writing and with expressed permission from the DBDriven Project Manager and the CNMI P20W SLDS Project Manager. Once changes to the Communications Management Plan are approved, the DBDriven Project Coordinator will update the plan, along with all supporting documentation, and distribute updates to the CNMI P20W SLDS Project Manager.

The DBDriven Project Coordinator is also responsible for updating the Communications Management Plan to reflect all changes and amended sections. Sections that include revisions or include addendums must be appropriately identified in the Communications Management Plan. The DBDriven Project Coordinator will maintain an appendix documenting all proposed and approved changes to the plan, including the date of the change and stakeholders involved in initiating and approving changes. This methodology is consistent with the project’s Change Management Plan and ensures all project stakeholders remain aware and informed of any changes to communications management of the CNMI SLDS project.

### 

## 6.2 Communications Management Restraints

All CNMI P20W SLDS project communication activities will occur within the project’s approved budget, schedule, and resource allocations. The DBDriven Project Coordinator is responsible for ensuring that communication activities are performed by the Project Team. Communication activities will occur in accordance with the frequencies detailed in the Communication Matrix in order to ensure the project adheres to schedule constraints. Because deviations from stipulated timelines may result in excessive costs and/or schedule delay, all deviations from timelines defined in the project plan must be approved by the CNMI P20W SLDS Project Manager.

## 6.3 Stakeholder Communication Requirements

The DBDriven Project Manager and Project Coordinator will communicate directly with the CNMI P20W SLDS Project Manager. The CNMI P20W SLDS Project Manager will serve as the primary point-person for all communications between the Project Team and project stakeholders. Standard project communications will occur in accordance with the Communication Matrix (see [Section 6.7](#_heading=h.26in1rg) of this document.) If directed by the CNMI P20W SLDS Project Manager, the DBDriven Project Coordinator will communicate directly with stakeholders on an as-needed basis.

The DBDriven Project Coordinator will provide information to the CNMI P20W SLDS Project Manager on a regular basis, as identified in the Communication Matrix, including regular updates on progress and accomplishments. These updates will keep the program office informed on matters related to:

* Project Schedule
* Project Scope
* Updated Issues and Risk Log
* Project Personnel changes
* Resource Timeline changes
* Achievements
* Budget

The CNMI P20W SLDS Project Manager will distribute project updates to all necessary stakeholders.

## 

## 6.4 Roles

**Customer**

The customer for this project is the Commonwealth of the Northern Mariana Islands.

**Project Sponsor – Rizalina Liwag (Mr. Tim Thornburg – Federal Programs Officer)**

The Project Sponsor is the champion of the project and has authorized the project. The Project Sponsor is responsible for the funding of the project and is ultimately responsible for its success. Since the Project Sponsor is at the executive level, communications will be presented in a summary format unless the Project Sponsor requests otherwise.

**Project Director – Annette Pladevega**

The Project Director is responsible for the successful implementation of the project. This person is responsible for ensuring the project is executed in accordance with the SLDS Grant, to include time and fiscal constraints.

**CNMI P20W SLDS Project Manager – To Be Determined**

The CNMI SLDS Project Manager oversees the project at the project level and oversees resource management for the Project Team. The CNMI SLDS Project Manager is responsible for overall project costs and reports to the Project Sponsor. The CNMI SLDS Project Manager will collect biweekly status reports from the DBDriven Project Manager and will distribute/communicate them to all relevant CNMI SLDS stakeholders.

**DBDriven Project Manager – Peggy Feldmann**

The DBDriven Project Manager has overall responsibility for operational execution of the CNMI P20W SLDS project for DBDriven. The DBDriven Project Manager provides project guidance,and monitors and reports on the project’s metrics as defined in the Project Management Plan.

**DBDriven Project Coordinator - Craig Moebus**

The DBDriven Project Coordinator is the primary communicator for the project, manages day to day resources and distributes project information according to the Communications Management Plan.

**Working Committee – Undefined at time of document submission**

The Working Committee consists of three appointed representatives as a sub-committee to the PSS Data Governance Committee. The Working Committee is responsible for oversight of stakeholder concerns. The Working Committee is also responsible for convening on project issues and delivering key decision points to the CNMI SLDS Project Manager.

**Key Stakeholders**

Stakeholders include all individuals and organizations impacted by the CNMI P20W SLDS project. DBDriven defines Key Stakeholders as a subset of the overall stakeholder group. Key Stakeholders include those with which the CNMI P20W SLDS Project Manager will provide project updates. Key Stakeholders include executive management with an expressed interest in the project and key users identified for participation in the project.

**Project Team**

The Project Team is composed of all persons who have a role performing work on the project. The Project Team will have a clear understanding of the work to be completed and the framework in which the project is to be executed. Because the Project Team is responsible for completing the work for the project, the Project Team plays a key role in creating the Project Plan, including defining its schedule and work packages. The Project Team requires detailed communications achieved through daily interactions with the Project Manager and other team members, along with weekly team meetings.

## 6.5 Project Team Directory

The following table presents contact information for all persons identified in the communications project plan. The email addresses and phone numbers in this table will be used to communicate with these team members.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Role | Name | Title | Organization/ Department | Email |
| Project Manager/ Quality Control | Peggy Feldmann | Program Manager | DBDriven | peggy@dbriven.net |
| Project Coordinator /  Test Lead | Craig  Moebus | Project  Manager | DBDriven | craig.moebus@dbdriven.net |
| Software Lead / Integration Lead / System Architect Lead | John Bailey | Software Development | DBDriven | john@dbdriven.solutions |
| BSA Lead / Test | Lauren McClure | BSA | DBDriven | lauren.mcclure@dbdriven.net |
| Junior Developer | Peter  Hadeed | Junior Developer | DBDriven | peter.hadeed@dbdriven.solutions |
| Junior BSA /  Test | Matthew Goldschmidt | BSA | DBDriven | matthew.goldschmidt@dbdriven.net |
| Infrastructure Lead | Dan Boersma | Infrastructure Lead | DBDriven | [dan@dbdriven.net](mailto:dan@dbdriven.net) |

**\* DBDriven is in the process of updating their email carrier. All emails will ultimately end in @dbdriven.solutions but @dbdriven.net will be forwarded.**

## 

## 6.6 Communication Methods and Technologies

The Project Team will determine, in accordance with DBDriven organizational policy, the communication methods and technologies based on several factors, including:

* Stakeholder communication requirements
* Available technologies (internal and external)
* DBDriven organizational policies and standards

DBDriven will use the CNMI / DBDriven Google Drive site to provide updates, archive various reports, and conduct project communications. This platform enables senior management, as well as stakeholders, to access project data and communications at any point in time. Google Drive also facilitates collaboration between stakeholders and Project Team on project work and communications. All internal project stakeholders and Project Team will be provided with access to the Google Drive.

## 

## 6.7Communications Matrix

The following table identifies the communications requirements for this project:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Communication Type | Objective of Communication | Medium | Frequency | Audience | Owner | Deliverable / Artifact |
| Weekly Component Team Meetings | Team members provide updates related to all modules under development for the current build cycle | Face-to-face meetings; teleconference; webinars | Biweekly | DBDriven P20W SLDS Project Team | Component Leads | Meeting minutes from team meetings |
| Weekly P20W SLDS Project Team Meeting | Team leads provide status updates, issue identification and resolution and risk identification and resolution | Face-to-face meetings; teleconference; webinars | Weekly | DBDriven Project Manager | DBDriven P20W SLDS Project Team | Meeting minutes from team meetings |
| Project Status Update | CNMI Project Team members provide individual project status updates, to be compiled into one document constituting the monthly project status update | Email | Monthly | CMNI P20W SLDS Project Manager; CNMI P20W SLDS stakeholders | DBDriven Project Coordinator | Monthly Project Status Update |
| Weekly Team Status Report | Information regarding team progress toward project milestones, schedule, and risks | Face-to-face meetings; teleconference; Email | Weekly; moving to biweekly when agreed | CNMI P20W SLDS Project Manager | DBDriven Project Coordinator | Informal Weekly Status Report |
| Project Plan | DBDriven’s overall approach and strategy for project execution | Email | One time | CNMI P20W SLDS Project Manager; CNMI P20W SLDS stakeholders | DBDriven Project Manager | Master Project Plan |
| Revisions to Project Plan | DBDriven’s revisions to the project plan, including updates to the project schedule, scope change, milestone status | Email; teleconference; webinar; face-to-face meetings | As necessary | Dbdriven P20w SLDS Project Manager; CNMI P20W SLDS stakeholders | DBDriven  Project Manager | Master Project Plan |
| Phase Kickoff Meeting | DBDriven Project Coordinator provides information regarding schedule, milestones, and deliverables for the upcoming Phase | Face-to-face meetings; teleconference; webinar | Beginning of each Phase | DBDriven P20W SLDS Project Manager; CNMI P20W SLDS stakeholders | DBDriven Project Coordinator | Kickoff Meeting |
| Project Deliverables | Delivery of all project deliverables outlined in RFP | Email | Submitted according to guidelines and all other agreed-upon deadlines | CNMI P20W SLDS Project Manager; CNMI P20W SLDS stakeholders | DBDriven Project Manager | Project Deliverables |
| Risk Log | Communication of any open/closed risks | Monthly status updates; email | Monthly | DBDriven Project Manager; CNMI P20W SLDS stakeholders | DBDriven P20W Project Coordinator | Risk Log |
| Issue Log | Communication of any open/closed issues | Bimonthly status updates; email | Bimonthly | CNMI P20W SLDS Project Manager | DBDriven Project Coordinator | Issue Log |
| Process to Address Immediate Unforeseen Risks | Communication of immediate, unforeseen risks to CNMI P20W SLDS stakeholders | Teleconference; email | Immediately upon occurrence; as necessary | CNMI P20W SLDS Project Manager | DBDriven Project Manager | N/A |
| External Project Communications | Provide information to external stakeholders about the CNMI P20W SLDS Project | All external project communication will be handled directly by the CNMI PSS Office | As necessary | CNMI PSS Office | CNMI P20W SLDS Project Manager | N/A |

## 6.8 Guidelines for Meetings

Basic meeting management principles apply to all project meetings, both for internal team meetings and meetings with project stakeholders. These principles serve to ensure efficient and effective use of meeting participants’ times. These principles include:

* Arriving to meetings on time
* Providing the speaker with your undivided attention
* Not interrupting the person speaking
* Not reading or responding to emails and messages during the session
* Constructively providing one’s opinion, especially regarding any concerns
* Being respectful of everyone’s opinion
* Asking questions

These management principles are intended to facilitate efficient and productive sessions. Attendees are encouraged to pose questions or ask for clarification on any subject as meetings progress.

### 

### 6.8.1 Meeting Requirements

The following section provides an overview of the requirements for all meetings with CNMI P20W SLDS stakeholders.

**Meeting Agenda**

The Meeting Agenda and accompanying presentation materials will be compiled one day in advance of the project meeting. For all meetings with CNMI P20W SLDS stakeholders, the DBDriven Project Coordinator will provide the meeting agenda one day in advance to the CNMI P20W SLDS Project Manager.

**Action Items**

Action items will be recorded for each meeting. Action items will include both the action item along with the owner of the action item. Meetings will start with a review of the status of all action items from previous meetings and end with a review of all new action items resulting from the meeting. The review of the new action items will include identifying the owner for each action item.

**Parking Lot**

The parking lot is used by the meeting facilitator to record and defer items that are not on the meeting agenda. Parking lot items include items that merit further discussion at a later time or through another forum. A parking lot record will identify the owner of an item; the owner of a parking lot item will be responsible for ensuring follow-up action is taken. DBDriven will take note of parking lot issues of each meeting.

**Meeting Recap**

At the end of each week, DBDriven will provide the program office with a recap of meetings involving CNMI P20W SLDS stakeholders. Recaps will include action items captured, parking lot items, and decisions made.

## 

## 6.9 Communication Escalation Process

All disputes, conflicts, and discrepancies regarding project communications will be resolved in a way that is conducive to maintaining the project schedule, ensuring correct communications are distributed at all times, and preventing any ongoing difficulties. DBDriven will utilize the following internal communication escalation model to ensure that the CNMI P20W SLDS project remains on schedule and issues are resolved accordingly.

The table below defines the priority levels, decision authorities, and timeframes for resolution.

|  |  |  |  |
| --- | --- | --- | --- |
| Priority | Definition | Decision Authority | Timeframe for Resolution |
| Priority 1 | Major impact to project or business operations. Significant adverse impact to project schedule is not resolved quickly. | DBDriven Partner/Project Sponsor | Within three business days |
| Priority 2 | Medium impact to project operations. May result in some adverse impact to project schedule. | DBDriven Project Manager/ CNMI P20W SLDS Project Manager | Within three to five business days |
| Priority 3 | Slight impact that may cause minor project scheduling difficulties. No significant impact to project operations. | Project Coordinator | Within one to two business weeks |
| Priority 4 | Insignificant impact to project operations and schedule. | Team Lead(s)/Stakeholders | Work continues and any recommendations are submitted via the change control process |

## 6.10 Project Information Management Strategy

Key to CNMI P20W SLDS project success is maintaining rigorous practices for securing all project information. Because of this, DBDriven will utilize standardized practices for the generation, documentation, storage, transmission, and disposal of all project information. The table below provides an overview of DBDriven’s project information management strategy:

|  |  |  |
| --- | --- | --- |
| Strategy | Description | Execution |
| Secure Information Generation | Ensure that all project information is created in a secure computing environment. | Team members will generate all project information on password-protected laptops. |
| Secure Information Storage | Access to all project information will be limited to internal Project Team members and relevant CNMI P20W SLDS stakeholders. | All project information will be stored in the following secure storage servers:  -DBDriven SFTP  -DBDriven secure file share  Access to all project information will require username and password verification. |
| Ensuring Appropriate Information Audience | Project Team will define the audience of all project documents in advance of creation and delivery to ensure all project information. | All team members will refer to the Communications Matrix and other applicable project documentation to define the appropriate Project Team members and/or CNMI P20W SLDS stakeholders to gain access to or receive project information. |
| Transmission of Information Over Secure Networks | Project Team will transmit documents only through secure networks, including VPN, password-protected and/or closed wireless networks. | All team members will ensure proper security measures are in place when transmitting, downloading, or copying documents and project information. |
| Minimizing Duplication and Copying of Project Information | Project Team will refrain from copying, duplicating, or disseminating any information relevant to the CNMI P20W SLDS project. | Project Team will save all documents to secure servers. Team members will refrain from saving documents locally or reproducing documents without expressed permission of the project sponsor. |
| Disposal of All Project Information | All project information will be considered property of CNMI PSS stakeholders. | DBDriven will provide ongoing access to project information to all relevant CNMI P20W SLDS stakeholders. Upon completion of project, all project information with specific relevance to CNMI P20W SLDS will be provided to CNMI P20W SLDS stakeholders. |

# 7.0 Quality Control Plan

The Quality Control Plan will ensure that DBDriven deliverables satisfy all contractual agreements, meet or exceed quality standards, and comply with all CNMI approved policies and procedures. The Quality Control plan outlines DBDriven’s practices for ensuring the quality and integrity of all project deliverables.

## 7.1 Quality Control Plan

Throughout the project lifecycle, DBDriven will maintain processes for ensuring the quality of all DBDriven deliverables. The following plan provides an overview of DBDriven policies and procedures for Quality Control.

### 7.1.1 Ensuring Quality of DBDriven Deliverables

In order to ensure quality of all DBDriven deliverables throughout the project lifecycle, all deliverables will be reviewed according to the following process:

**Deliverable Assignments:**

DBDriven Project Coordinator assigns Project Team members ownership of specific tasks and/or documents related to deliverables.

**Initial Project Manager Review:**

Project Team members submit all documents for initial review by the DBDriven Project Coordinator. DBDriven Project Coordinator reviews all documents and returns to Project Team members for edits.

**Preliminary Team Review:**

Project Team members exchange all documents internally for peer review. Project Team members return documents to their owners with edits and comments.

**Secondary Project Manager Review:**

Project Team members submit all documents to the DBDriven Project Coordinator for a secondary review. DBDriven Project Coordinator works with team members individually if additional edits are necessary.

**Final Team Review:**

Project Team members review all documents/deliverables and make final edits. Documents are compiled and packaged for submission as formal deliverables.

**Final Project Manager Review:**

DBDriven Project Manager conducts a final review of all deliverables.

**Initial Quality Review:**

DBDriven Project Manager submits all deliverables to DBDriven Chief Operating Officer (COO) for Initial Quality Review. COO reviews all deliverables for quality and provides feedback to DBDriven Project Manager where applicable.

**Initial Feedback Review:**

DBDriven Project Manager incorporates any edits or changes as identified in the Initial Quality Review. DBDriven Project Manager meets with the DBDriven COO to address any specific questions or issues related to content and structure of deliverables.

**Final Quality Review:**

DBDriven Project Manager submits deliverables to DBDriven COO for final quality review. The COO will authorize and certify quality review of all documents prior to submission to CNMI.

**Deliverable Submission**

DBDriven Project Manager submits deliverables to CNMI P20W SLDS Project Manager.

### 7.1.2 Ensuring Quality of Project Management

In addition to ensuring the quality of project deliverables, DBDriven Quality Control will also include periodic reviews of project status. These areas may include, but not be limited to:

* Project timeline
* Project budget
* Progress toward milestones

Project Team will ensure Quality Control in these and other areas by holding weekly status update meetings at which the DBDriven Project Manager will be in attendance. DBDriven Project Coordinator and Project Team members will provide updates and record project progress in meeting notes. DBDriven Project Manager will review all project progress on a weekly basis. Any concerns related to Quality Control will be addressed with the DBDriven Project Coordinator on an ongoing basis.

# 8.0 Knowledge Transfer Plan

The purpose of the Knowledge Transfer Plan is to provide a high-level overview of the information, resources, and strategies DBDriven will utilize in order to execute a successful knowledge transfer of the CNMI P20W SLDS to CNMI PSS stakeholders. This chapter includes information regarding the instruction, training, staff, time, and other resources DBDriven will allocate to accomplish a successful knowledge transfer. The strategies outlined in this plan will ensure that CNMI P20W SLDS stakeholders are able to effectively and independently operate, monitor, and maintain the CNMI SLDS in the long-term.

## 

## 8.1 Strategies for Knowledge Transfer

Drawing on best practices, DBDriven will employ the following knowledge transfer strategies:

* Knowledge Capture
* Defining Critical Tasks and Activities
* Identification of Key CNMI P20W SLDS Stakeholders
* Development of Training Materials and User Instruction Manuals

DBDriven will implement these strategies throughout the development of the CNMI P20W SLDS and across the CNMI P20W SLDS project life cycle. The following sections include details on each facet of DBDriven’s overall knowledge transfer strategy.

### 8.1.1 Knowledge Capture

Effective knowledge capture throughout the CNMI P20W SLDS project will be critical for knowledge transfer to CNMI PSS stakeholders. Over the course of each work cycle, DBDriven will utilize a strategy of process documentation. Process documentation ensures that DBDriven will continuously identify critical knowledge areas and implement appropriate means for knowledge capture.

Over the course of the CNMI P20W SLDS project, process documentation will include:

* Documenting all information necessary to understand individual components
* Where possible, providing flowcharts, procedure manuals, process maps, workflow charts, and storyboarding to ensure maximum information capture
* Providing a detailed guide to troubleshooting and common issues with each particular component

All knowledge captured throughout the development process will be stored in CNMI / DBDriven Google Drive folders.

#### 8.1.1.1 Identifying Areas of Knowledge Capture

The following table provides an overview of key knowledge areas and DBDriven strategies for ensuring knowledge capture:

|  |  |  |
| --- | --- | --- |
| Knowledge Area / Component | Specific Tool | Strategy for Knowledge Capture |
| Workflow | MS CRM | User Manual |
| Portal | Umbraco 7 | User Manual |
| Data Dictionary | .NET | Process Documentation |
| Data Request Tool | XML | Process Documentation |
| Data Matching Engine | Data Ladder DataMatch | Process Documentation |
| Reports | MS PowerBI | Process Documentation |
| Lexicon Management Tool | MVC | User Manual |
| Data Hub | SQL Server | Process Documentation |
| Data Adapter | .Net Core, Java | Installation Guide |
| Security | Active Directory, SSL, SecureKey, CRM, Umbraco | Process Documentation |
| Data | Oracle, SQL Server, Others | Process Documentation |

### 8.1.2 Defining Critical Tasks and Activities

Throughout the project life cycle, DBDriven will work to identify and define critical tasks and activities necessary to support the CNMI P20W SLDS use, operation and maintenance. Included in process documentation will be a list of critical tasks and activities required in order to facilitate the transfer of system knowledge to CNMI PSS stakeholders. Whenever possible, DBDriven will identify and document any critical tasks and activities necessary for successful user and vendor maintenance of the CNMI P20W SLDS. DBDriven will capture these critical tasks and activities in the process documentation for specific components of the CNMI P20W SLDS.

### 8.1.3 Identification of Key CNMI P20W SLDS Stakeholders

DBDriven requests CNMI PSS identify key CNMI P20W SLDS stakeholders. Identifying key stakeholders throughout each phase will provide DBDriven with a firm understanding of the personnel who will serve as point-people for the purposes of knowledge transfer.

DBDriven will work with CNMI PSS to identify key stakeholders for knowledge transfer.

* CNMI Public School System

DBDriven recommends CNMI identify key stakeholders based on the following requirements:

* Agency affiliation
* Agency leadership
* Agency-identified staff members
* Agency personnel with responsibilities related to CNMI P20W SLDS implementation, maintenance, and support
* Agency technical staff

### 8.1.4 Development of Training Materials and Instruction Manuals

DBDriven will develop instruction manuals and training materials for CNMI P20W SLDS stakeholders. Training materials and instruction manuals will provide the core of DBDriven’s knowledge transfer efforts and will ensure that CNMI P20W SLDS stakeholders are able to operate the CNMI P20W SLDS in the long-term.

## 8.2 Revisions to the Knowledge Transfer Plan

DBDriven regards this Knowledge Transfer Plan as an iterative document. CNMI P20W SLDS stakeholders may request changes or modifications to the Knowledge Transfer Plan as necessary throughout the project life cycle. Changes to the Knowledge Transfer Plan must include approval of the DBDriven Project Manager, CNMI Project Manager, and relevant CNMI P20W SLDS stakeholders.

# 10.0 Migration and Management Plan

The purpose of the Migration and Management Plan is to detail how the CNMI P20W SLDS will transition from development to production.

## 10.1 Development Methodology

DBDriven will employ an adapted agile methodology for the CNMI P20W SLDS project. In general, the adapted Agile methodology will deliver an updated build (code) for each of the planned work cycles and development phases. Builds will involve the team working through the full software development life cycle including planning, requirements, design, development, unit and system testing and acceptance testing (for details on testing, see Test Management Plan).

It is expected that there will be two production releases during the execution phase of the project. The CNMI P20W SLDS will be released into production following the completion of all iterations and a comprehensive User Acceptance Test (UAT) and acceptance of the system by CNMI PSS.

The process for each release is as follows:

1. A component comprises one or more modules. Each component of the system will be developed using the same methodology. Development will be managed at the component level. Please refer to the Project Work Plan for a list of all Components and associated modules. The following describes the build (maturity) cycle for all Components and Modules.
   1. Unit Tested: Developers will begin work on a Unit Tested version of the software. Business Systems Analysts (BSAs) will build test cases and/or test requirements for all software prior to Unit Test. Software which has achieved Unit Test status, meaning it has been unit tested, is a candidate for the next Release (e.g. Rel 0.1, etc.). At a minimum, all software in a release will have achieved Unit Test status. Software designated as Unit Test will have passed Unit testing by the developer, BSA, and Quality Assurance (QA) personnel.
   2. Integration Tested: Modules that must integrate with one or more other modules within the same Component (intra-component) or with other Components (inter-component) must mature to an Integration Test status. Integration Test designation means that the software has successfully passed all intra-component/inter-component testing. Testing for Integration Test will be scenario-based testing (scenarios will be built jointly with functional user assistance). Integration Test testing will be performed by BSAs, testers and QA personnel.
   3. System Integration Testing (SIT): Each system release will undergo SIT at the end of each phase. SIT testing is conducted to ensure that each system release is functioning properly and is ready for User Acceptance Testing (UAT). SIT will be performed by developers, BSA’s, and the QA team. Any defect or change requests will be identified and presented to stakeholders prior to UAT.
   4. UAT: A User Acceptance Test (UAT) will follow the build cycle for Rel 0.1. UAT will be managed by the CNMI P20W SLDS Project Office. DBDriven will provide a defect coordinator and developers to assist testers with functional and technical questions. All defects will be documented by CNMI and presented to the DBDriven Project Team as early as possible. DBDriven with CNMI will manage all change requests, issues and bugs in the defect tracking tool.

There will be a fix cycle following each UAT. Defects that cannot be corrected during the fix cycle will be documented and placed in the next build cycle.

1. Releases 0.1 – 0.n will include all modules and sub-modules that have matured to Unit Tested. Eventually all Components and Modules will progress through the build (maturity) cycle. Each Release will include all previously developed functionality plus any new functionality that has been built during the current phase. Prior to each build phase, the CNMI P20W SLDS project office and DBDriven will:
   1. Develop a list of known requirements.
   2. Coordinate a Kick-off meeting with the stakeholders during which the scope of the Module(s) will be agreed to and high-level requirements will be validated. The build cycle will begin once agreement on scope and requirements has been achieved.
2. Final UAT: The Program and Project Offices will coordinate a Final UAT. The Final UAT will be a comprehensive test of the eight components and all the modules. All defects identified during the Final UAT will be logged and fixed in a final fix cycle at the conclusion of the Final UAT.
3. Version 1: Version 1 is the software designation for the first production release of the CNMI P20W SLDS. Version 1 is the cumulative result of Releases 0.1 thru 0.n, the Final UAT and the fix cycle following the Final UAT.

## 10.2 System Design

The CNMI P20W SLDS is comprised of commercial off-the-shelf (COTS) products. Each product has been configured customized by modifying screens, adding tables, and creating reports and workflows. The products have been extended by building custom web services to allow integration with other COTS products. CNMI P20W SLDS is referred to as a system while the COTS products that comprise the CNMI P20W SLDS are referred to as products. The customizations and extensions are referred to as software.

The CNMI P20W SLDS, components and products, each have their own version scheme (number). Version numbers are made up of Major, Minor, Revision and Build. The CNMI P20W SLDS, components and products each share the same Major number. The Minor, Revision and Build numbers reflect changes independently of one another but impact the other systems in the hierarchy.

## 10.3 CNMI P20W SLDS Build Hierarchy

The CNMI P20W SLDS Build hierarchy may be represented as follows:

* CNMI P20W SLDS
  + Portal (Component)
    - Umbraco (Product)
      * CNMI P20W SLDS Controls (Software)
      * CNMI P20W SLDS Core (Software)
      * Content (Software)
    - .Net (Product)
      * Web Services (Software)
      * CNMI P20W SLDS\_AdHoc (Software)
  + Workflow (Component)
    - Dynamics CRM (Product)
      * CNMI P20W SLDS Workflow Activities (Software)
      * CNMI P20W SLDS Core (Software)
      * CNMI P20W SLDS Workflow (Software)
      * Web Services (Software)
  + Reporting (Component)
    - SQL Server Reporting Services (Product)
  + Security (Component)
    - Stretches across all components and products
    - Microsoft Active Directory (Product)
  + Data Dictionary (Component)
    - .Net (Product)
  + Lexicon Management Tool (Component)
    - .Net (Product)
  + Data Hub (Component)
    - SQL Server (Product)
    - Java (Product)
      * Data Adapter (Software)
  + Matching Engine (Component)
    - DataMatch (Product)
  + Data (Component)
    - SQL Server (Product)
    - Oracle (Product)
    - Other (Product)

## 10.4 Products

The products that make up the CNMI P20W SLDS are Microsoft Dynamics CRM, Umbraco, Microsoft SQL Server Reporting Services (SSRS), and DataMatch. Each component is a COTS product that has been customized and/or extended to address requirements and to facilitate integration with other CNMI P20W SLDS components. The purpose of each component is as follows:

|  |  |
| --- | --- |
| Product | Description |
| Dynamics CRM | Used to store and manage researcher and research purpose data, to include rights and permissions data. Allows for administration of the CNMI P20W SLDS Portal users. |
| Umbraco | Serves as the web portal for researchers to manage projects. Interacts with Dynamics CRM to save and retrieve project data via web services. |
| DataMatch | Used to conduct the data matching hub functions and near match resolution. |
| Azure SQL Server | SSRS used to create the reports and store data. |
| .Net | .Net is used to create applications and functionality not provided by COTS products. For example the data dictionary and selection tool and the Lexicon Management Tool are built in .Net. |

## 

## 10.6 Version Scheme

A version scheme represents a series of numbers that denotes the release version of a component or product. For example, Dynamics CRM IBN may be 1.3.10, Umbraco IBN may be 1.4.5 and the CNMI P20W SLDS may be 1.4.15. The CNMI P20W SLDS and components use the following version scheme:

|  |  |
| --- | --- |
| Type | Description |
| Major | Stays the same throughout the project. Would be incremented beyond the first project. |
| Minor | Incremented for feature/function additions only |
| Revision | Always incremented. Reset to zero upon incrementing the minor |

Each product making up the components (e.g., Solutions, Web Services, etc.) will have a version scheme as well. Each product will contain the following scheme:

|  |  |
| --- | --- |
| Type | Description |
| Major | Stays the same throughout the project. Would be incremented beyond the first project. |
| Minor | Incremented for feature/function additions only |
| Revision | Always incremented. Reset to zero upon incrementing the minor |
| Build | Automatically incremented at compile time |

Example:   
CNMI P20W SLDS Core solution had a feature added. As a result of adding a feature, the build number became 1.2.0. The prior build number was 1.1.10. Because a feature was added, the minor was incremented from 1 to 2 and the revision was reset from 10 to 0. CRM Web Services had a bug correction. As a result, the build number became 1.4.12.225. The previous build number was 1.4.11.215. Since there were no additions, only a bug correction, there was no need to increment the minor. However, the revision and build number was incremented.

The build number has meaning for the developers to indicate the number of compiles performed. The developers may have compiled the Web Services assembly 10 times while working on this bug, but only incremented the revision from 11 to 12 upon deployment of the correction of the bug. Since the CNMI P20W SLDS Core solution is made up of CRM customizations and is exported from the development environment, it is not compiled and therefore does not have a build number. Build numbers only relate to compiled products.

## 

## 10.8 Environments and Migration

The CNMI P20W SLDS will utilize three environments: development, testing, and production. This section will describe in detail the purpose and use of the three environments throughout the CNMI P20W SLDS project and the conditions for build (code) migration into each environment.

Note that only two environments will be utilized prior to CNMI P20W SLDS Go-Live. Prior to Go-Live all SIT and UAT testing will be conducted using the production environment.

Information regarding the process for source code versioning will be included in Deliverable 5.13 – System Development and Configuration.

## 10.9 Development Environment

The Development Environment’s designated purpose is to serve as the initial environment/sandbox where new coding occurs. This environment allows developers to develop code and validate its operation without impacting any existing testing, production, or even development code.

In order for code to be promoted from the Development Environment to the Test Environment, it must have successfully achieved Unit Tested status.

## 10.10 Test Environment

The Test Environment’s designated purpose is to allow code that has been Unit Tested to be tested with other components of the project to ensure compatibility and integration. The goal of this environment is to combine and validate the work of the entire Project Team so it can be tested before being promoted into the Production Environment.

In order for code to be promoted from the Test Environment to the Production Environment, it must have successfully achieved Integration Tested, Cross-Integration Tested, and UAT Tested statuses.

Note that prior to Go-Live, UAT will be conducted in the Production Environment. As such, build promotion to the Production Environment will occur after Integration and Cross-Integration Tested Statuses have been successfully achieved. Following Go-Live, UAT will be conducted in the Test Environment.

Details regarding the test environment, including issues related to code, will be provided in Deliverable 5.13 – System Development and Configuration.

## 10.11 Production Environment

The Production Environment’s designated purpose is to house the actual CNMI P20W SLDS that will run once the system achieves Go-Live. Only builds that have passed Final UAT will be promoted to the Production Environment.

Details regarding the production environment, including issues related to code, will be provided in Deliverable 5.13 – System Development and Configuration.

## 10.12 Code Promotion and Migration

Following development and testing, the Software Lead will submit, to the DBDriven Project Manager, a request to promote code. The Software lead will provide the code versions, code promotion documentation, and the enhancements, changes or bug-fixes contained within the code to be promoted. The DBDriven Project Manager will direct the Infrastructure Manager to execute the code promotion. Following promotion of the code the Infrastructure Manager will notify the DBDriven Project Manager and the Software Lead.

Details regarding code promotion and migration, including issues related to the process for issue resolution, will be provided in Deliverable 5.16 – Operations and Support Documentation. Additional details related specifically to the build environments, such as development machines, will be provided in Deliverable 5.13 – System Development and Configuration.

## 10.13 Roles and Responsibilities

This section identifies the teams that comprise the CNMI P20W SLDS Project Team and their associated functions, roles and responsibilities.

### 10.13.1 Requirements Team

The role of the Requirements Team is to ensure that requirements are captured, entered as Work Items in TFS, and tested prior to code promotion/migration. The Requirements Team will perform the following functions:

* Create and clean up Release Notes and Known Issues List.
* Create Test Case work items for each feature added as a change request.
* Publish Release Notes for Stakeholders.

All requirements will be captured and documented by the Business Systems Analyst(s).

### 

### 10.13.2 Development Team

The following development teams are involved in the release management process:

* Data Warehouse (Azure)
* Portal (Umbraco)
* Workflow (MS Dynamics)
* Data Request Tool (DRT)
* Matching Hub (DataMatch)
* Reporting (SSRS)
* Data Hub (SQL Server)

Each team is responsible for the development and maintenance of their corresponding component. They perform the following functions:

* New development
* Maintenance
* Bug Correction
* Application Architecture

The developers perform the above actions in the course of the applications life cycle. The applications life cycle is comprised of:

* Planning
* Requirements
* Design/Architecture
* Development
* QA/Testing
* Bug Correction/Maintenance
* Release

Developers will provide completed code to the Build Management team for release to the Test environment following the code release process.

### 10.13.3 Build Management Team

The role of the Build Management Team is to prepare a build for release to the Test Team. The Build Management Team will perform the following functions:

* Review build for release to Test
* Communicate to developers, testers and release managers concerning code check in’s and build availability

All code promotion will be managed and implemented by the Infrastructure/Technical Lead.

### 10.13.4 Test Team

The role of the test team is to ensure that prior to release, applications are functioning as planned and any feature additions/modifications have been implemented and are working. Testers perform the following functions:

* Test and resolve Bugs
* Test and resolve Change Requests
* Enter bugs against Change Requests
* Work from release notes for a given release
* Review completed tests to determine the availability of a build for release to Production

Once a release has been tested, the testers will certify a release for promotion to the Production environment.

### 10.13.5 Release Management Team

The role of the Release Management Team is to promote products once they have been notified. The Release Team will perform the following functions:

* Promote changes to the Test environment
* Promote changes to the Production environment
* Communicate maintenance schedules to the Application owner

In accordance with the [Quality Plan](#_heading=h.qsh70q) section of this document, overall Quality Control of the product and project will be managed and supervised by the DBDriven Chief Operations Officer.

# 11.0 Requirements Management Plan

The Requirements Management Plan will detail the requirements gathering processes during Phase 1 and Phase 2. Phase 3 requirements will be dependent on additional organizations and data sets being added to the P20W solution. This plan will outline how requirements will be identified, analyzed, documented, and managed for the CNMI P20W SLDS project.

## 11.1 Requirements Management Approach

The requirements management process is made up of the following core components:

* Requirements Identification
* Requirements Analysis
* Requirements Documentation
* Requirements Management

### 11.1.1 Requirements Identification

Requirements Identification will take place throughout Phase 1 and will be collected through various methods including:

* Fit-Gap sessions/workshops
* Interviews
* Focus groups
* Product demonstrations
* Joint application design sessions
* User acceptance testing sessions
* Additional requirements gathering sessions/workshops

Key CNMI SLDS stakeholders will be invited to attend relevant meetings to ensure that all requirements are properly captured.

### 11.1.2 Requirements Analysis

After identifying requirements, DBDriven will analyze the requirements to determine which components are affected by the requirements and determine the priority of the requirements.

Requirements will be prioritized through the Stakeholder Working Committee. Stakeholders will prioritize the requirements using the following metrics:

* 1 (High) – System Critical needs to be addressed immediately
* 2 (Medium) – Must be completed in the same Phase
* 3 (Low) – Must be completed by Phase 3
* 4 (Negligible) – Are not required but are captured needs

Regular stakeholder meetings are necessary throughout the project to balance project constraints with requirements and their priorities. Changes to requirements and their priorities may occur as a result of constraints. All changes will be captured in Microsoft Azure DevOps Team Foundation Server (TFS).

Each requirement will also be assigned associated metrics and acceptance criteria in order to develop the project baseline. Metrics may include, but are not limited to: cost, quality, and schedule.

### 

### 11.1.3 Requirements Documentation

TFS will be used to document, assign, and monitor all project requirements. Each requirement will be captured in TFS and assigned to a team member(s) for management. The assigned team member’s job is to ensure the requirement is tracked and documented throughout the project.

Approved requirements will be captured and integrated as part of the detailed project plan. In Phase 1, DBDriven will develop a Microsoft project plan along with the Master Project Plan. These two documents act as the project baseline. The baseline will be reevaluated at the beginning of Phase 2.

### 11.1.4 Requirements Management

Throughout the CNMI P20W SLDS project, the DBDriven Project Coordinator will ensure all team members identify and document stakeholder requirements. The Project Team will use TFS to monitor the progress and completion of each requirement and report the status to the DBDriven Project Manager. The DBDriven Project Manager will develop a detailed project plan and project baseline that will identify requirements and detail the plan for when requirements will be met/satisfied. The detailed project plan and baseline will be delivered to the CNMI P20W SLDS Project Manager for approval.

Note that once the project baseline is established and approved, any new requirements will be classified as change requests that must originate from the CNMI P20W SLDS Project Manager and must follow the Change Management Process.

# 12.0 Risk Management Plan

The risk management plan will identify, categorize, assess, and plan the mitigation of risks throughout the entirety of the project.

DBDriven wants to emphasize to the CNMI P20W SLDS team the low level of technical risk inherent within DBDriven’s proposed solution. DBDriven’s proposed solution is currently a deployed and operational system. It is used on a daily basis by K-12, higher education, and workforce agency employees, as well as approved, independent researchers, on a variety of research projects. The solution has multiple partner agencies and is focused on the provision of data for research through the use of a federated hybrid data architecture. Many of the risks and potential technical points of failure have been previously identified and mitigated.

DBDriven’s risk management plan will focus primarily on cost, schedule, scope, and stakeholder risk. These components are managed individually via separate mechanisms and rolled up for communication and coordination between the DBDriven Project Manager, who is responsible for risk management, and the CNMI P20W SLDS Project Manager.

## 12.1 Risk Management Process

The risk management process is made up of the following core components:

* Risk Identification
* Risk Qualification and Prioritization
* Risk Monitoring
* Risk Response

### 12.1.1 Risk Identification

The most critical component of risk management is the effective identification of risks. All risks will be captured in the Risk Register (Appendix D).

At a minimum, ongoing risks will be captured on a weekly basis. As part of the Communications Plan, each member of the Project Team will be responsible for weekly status reports which include a dedicated section related to risk identification. As such, risk identification will be the responsibility of the entire Project Team. All risks will be added to the Risk Register and communicated to the CNMI P20W SLDS Project Manager on a monthly basis.

The DBDriven Project Manager will work collaboratively with the CNMI P20W SLDS Project Manager to manage risk.

### 12.1.2 Risk Qualification and Prioritization

Following risk identification, each risk will be categorized. Examples of categories include but are not limited to the following types of risk:

* Scope
* Cost
* Schedule
* Technical
* Management
* Stakeholder
* External

Following risk categorization, each risk’s impact and probability of occurrence will be given a value of 1 to 3 based on the following metrics:

Impact:

1 – Low impact on project

2 – Medium impact on project

3 – High impact on project

Probability:

1 – Low probability of occurrence. Below 30% probability.

2 – Medium probability of occurrence. Between 30 and 70% probability.

3 – High probability of occurrence. Greater than 70% probability.

The overall risk score will be the product of the impact and probability. The higher the risk score, the higher the assessed priority. Based on priority and other factors, including schedule/timing, each risk will be assigned a period in which it must be addressed.

|  |  |  |  |
| --- | --- | --- | --- |
| **RISK SCORE** | | | |
|  | Impact | | |
| Probability | 1- Low | 2- Medium | 3 - High |
| 3- High (70-100%) | Medium | High | Extreme |
| 2 - Medium (30-70%) | Low | Medium | High |
| 1 - Low (0-30%) | Minimal | Low | Medium |

Risk Score definitions:

* Minimal – Risk will generally be accepted/ignored
* Low – Risk will be monitored but will generally be accepted
* Medium – Risk will require development of a mitigation strategy including risk cue that will determine if a mitigation strategy must be enacted
* High – Risk will require immediate action, which may include execution of a risk response or contingency plan
* Extreme: Risk will require immediate action, which may include execution of a risk response or contingency plan

### 12.1.3 Risk Monitoring

Following risk qualification and prioritization, each risk will be assigned to a team member who will be the responsible Risk Manager for that risk. Risk Managers will monitor the risk and report risk changes/triggers to the DBDriven Project Manager on a weekly basis through the weekly status reports. Should a risk response be employed, the Risk Manager will be responsible for monitoring and documenting the result of the risk response and any planned future actions that may be required.

All project change requests will be analyzed for their possible impact to the project risks.

### 12.1.4 Risk Response

Following risk qualification and prioritization, each Risk Manager will develop a planned risk response. Risk responses can be one of the following:

* Mitigation – A response that puts into action a plan to resolve or reduce the risk
* Avoidance – A response that allows the project to avoid the risk
* Transfer – A response that transfers the risk to another, typically external, group
* Accept – A response that accepts the risk but does not put into action a plan to Mitigate, Avoid, or Transfer the risk, utilized for low-level risks
* Defer – A response that defers the risk to be addressed at a later date, utilized for low-level risks

The planned risk response will be documented and communicated to the DBDriven Project Manager for approval.

## 

## 12.2 Risk Register

The Risk Register will be the tool used to manage risk throughout the course of the CNMI SLDS project. The Risk Register will be maintained by the DBDriven Project Coordinator and will be made available to the CNMI P20W SLDS Project Manager and CNMI P20W SLDS stakeholders.

## 12.3 Risk Closure

Once the Risk Owner determines that a risk has been resolved, he/she may make a recommendation to close that risk. The DBDriven Project Manager will then authorize the closure of the risk. All risk closures will be documented in the Risk Register and communicated to the CNMI P20W SLDS Project Manager in the monthly status report.

CNMI stakeholders can concur with the closure or reopen the risk. All stakeholder decisions on risk closure will be communicated to DBDriven by the CNMI P20W SLDS Project Manager. Any actions related to risk closure or risk reopening will be documented in the Risk Register.

# 13.0 Test Management Plan

Testing is the process of analyzing a software item to detect the differences between existing and required conditions and to evaluate the features of the software item.

This Test Plan captures the high-level details of the various types of testing throughout the CNMI P20W SLDS project. This document is designed to outline the scope, methodology, resources, and schedule of all testing activities. This plan identifies the types of testing to be performed, the personnel responsible for testing, and the schedule required to complete testing.This testing plan will detail the following:

* Test Items
* Test Schedule and Key Milestones
* Methodologies
* Roles and Responsibilities
* Testing Tools & Techniques

## 12.1 Test Items

The following are the four different types of testing to be performed on CNMI P20W SLDS:

* Unit Testing
* Integration Testing
* System Integration Testing
* User Acceptance Testing

## 12.2 Unit Testing

Unit testing will be planned for each module and sub-module that will be iteratively developed. Unit testing will be performed by the developers and business systems analysts (BSAs)/testers. All modules will be unit tested by the developer, the BSA, and the QA team. Software that has successfully completed Unit Testing will be designated Beta.

CNMI P20W SLDS components will undergo unit testing prior to subsequent Integration and User Acceptance Testing. Unit testing must be conducted during system development cycles and is intended to prepare for and simplify succeeding integration tests. DBDriven will describe its approach for quality Unit Testing and ensuring individual code readiness. For control purposes, the DBDriven will ensure testing and validation of individual units of code and document unit test results to CNMI P20W SLDS Project Manager prior to subsequent system and other integrated testing.

## 12.3 Integration Testing

Modules that must integrate with one or more other modules within the same component (intra-component) must mature to Integration Test status. Integration Test designation means that the software has successfully passed all intra-component testing. Integration Testing may not be required for all modules. Testing for Integration Test will be scenario-based testing (scenarios will be built jointly with functional user assistance). Integration Test testing will be performed by BSAs, testers and quality assurance (QA) personnel.

## 12.4 System Integration Testing

System Integration Testing (SIT) will be conducted on each system release at the end of each phase. SIT will be performed prior to User Acceptance Testing. SIT will be performed by developers, BSA’s, and the QA team. Any defects or changes requests will be identified and presented to stakeholders involved in User Acceptance Testing. Defects which cannot be corrected prior to UAT will be documented and placed in the next build cycle.

## 12.5 User Acceptance Testing

User Acceptance Testing (UAT) will be performed for each release. Stakeholders will participate in the UAT following the completion of each build cycle. Any defects or change requests will be corrected during the fix cycle or handled in subsequent releases.

A User Acceptance Test will follow the build cycle for Rel 0.1. The UAT will be managed by the DBDriven Program Office, with support from the CNMI P20W SLDS Project Office. DBDriven Test Lead (Test Lead) and Business Systems Analysts will be available to assist users with functional and technical questions. All defects will be documented by TL and BSAs and managed in a defect tracking document. There will be a fix cycle following each UAT. Defects which cannot be corrected during the fix cycle will be documented and placed in the next build cycle.

## 12.6 Test Schedule & Key Milestones

Testing will be performed at several points in the project as the product is constructed. Testing is a very 'dependent' activity. As a result, test planning is a continuing activity performed throughout the system development life cycle. Test plans must be developed for each level of product testing. Below is the timeline for the different testing events:

|  |
| --- |
| Phase I – UAT – *January – February 2022* |
| Phase II – UAT – *November – December 2022* |
| Phase III – P20W Onboarding Testing – *January – December 2023* |

## 12.7 Testing Process

Test cases/scenarios and test criteria will be developed and managed in Microsoft Office and Team Foundation Server (TFS). The DBDriven Project Office will create and manage a traceability matrix, ensuring all requirements have a corresponding test scenario/requirement and that all defects are linked to the test scenario/requirement. DBDriven will provide functional and technical assistance to CNMI during each UAT. This approach provides significant benefits and was previously utilized with great success. It provides CNMI stakeholders with frequent visibility of the product, enhances the overall training efforts, increased user buy-in, and helps to identify stakeholder expectations throughout the development and testing process.

## 

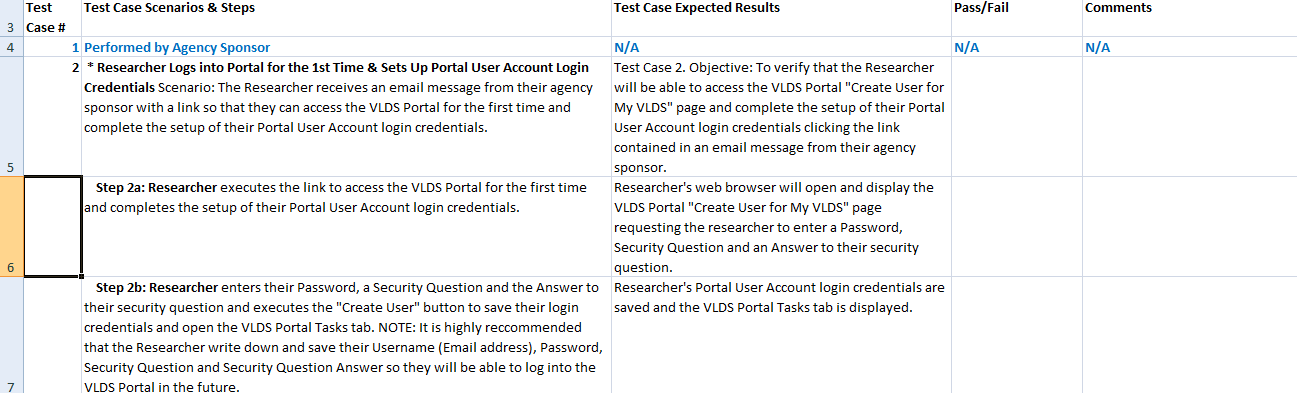
## 12.8 Documentation

All test results will be captured and documented. DBDriven will use Microsoft Office and Azure DevOps Server (TFS) to develop and document all testing or test scripts.

## 

## 12.9 Testing Tools and Techniques

Each tester will be assigned a role and based upon that role will complete portions of a test plan spreadsheet indicating Pass/Fail for each step and recording any issues which they encounter. The following is an example of the Test Script.

****

### 12.9.1 Bug Triage Management Process

Triage is the process the UAT Test Support Team will use to review newly reported or reopened bugs, assign a priority and iteration to them, and assign a development team member to fix them. The triage process will be driven by the UAT Test Support Team Lead.

The Test Support Team Lead, with input from the CNMI Project Office, will use a priority and severity ranking process to determine which bugs the development team should fix and resolve first. The following tables define and describe the priority and severity ranking process used to plan and prioritize bug fixes.

|  |  |
| --- | --- |
| Name | Description |
| Priority | Defines the associated impact/risk on the project and should be based on priority by which the WI should be executed. |
| Severity | The impact of the bug on the operation of the system. |
| Rank | Defines the priority of the WI within a given sprint/Work Cycle |

|  |  |
| --- | --- |
| Priority  Ranking | Description |
| 1=Critical | System Critical needs to be addressed immediately. |
| 2=High | Must be completed in the same phase. |
| 3=Medium | Must be completed by Phase 3. |
| 4=Low | Are not required but are captured needs. |

|  |  |
| --- | --- |
| Severity  Ranking | Description |
| 1=Critical | System Critical needs to be addressed immediately. |
| 2=High | Must be completed in the same Sprint. |
| 3=Medium | Must be completed in the same phase. |
| 4=Low | Must be completed by Phase 3. |

### 12.9.2 Exit Criteria

The exit criteria allow developers and testers to establish the minimum requirements for functionalities before moving to the next phase of development. The following table outlines the If-Then process for development.

|  |  |  |
| --- | --- | --- |
|  | If… | Then… |
| Severity Ranking | **Description** | **Exit or Triage** |
| 1=Critical | Affects critical data or functionality in major feature that severely affects users, with no workaround (e.g., user unable to complete a critical task necessary to perform his/her job) | Triage |
| 2=High | Affects critical data or functionality in major feature with a difficult workaround (e.g., user is able to complete a critical task with some difficulty using a workaround that is not obvious and/or is hard to use). | Triage/Exit |
| 3=Medium | Affects non-critical data or functionality in major feature, with an easy workaround. For data loss or corruption, problem temporary, and/or is easily detected and corrected by user. | Exit |
| 4=Low | Affects temporary or peripheral data or functionality | Exit |

# 14.0 Resource Plan

The Human Resource plan is a tool, which outlines this project’s human resources and responsibilities throughout the project until closure.

This resource plan will:

* Define “roles and responsibilities for the vendor and subcontractors”
* Include a “staff management plan and resource allocation”
* Outline dates indicating when project resources will enter and exit the project
* Define the process and approach for personnel and resource risks, including “early identification and execution risks to ensure the most effective use of project personnel”

## 14.1 Roles and Responsibilities

Support staff for the CNMI P20W SLDS project consists of DBDriven personnel. The roles and responsibilities outlined below only consist of DBDriven and do not include CNMI agencies’ staff members.

The roles and responsibilities for CNMI P20W SLDS project are essential to project success. All team members must clearly understand their roles and responsibilities in order to successfully perform their portion of the project.

* **Project Manager (PM):** Responsible for the overall success of the project. The PM must authorize and approve all project expenditures. The PM is also responsible for approving that work activities meet established acceptability criteria and fall within acceptable variances. The PM will be responsible for reporting project status in accordance with the communications management plan. The PM also serves as the Lead System Architect and is responsible for designing and implementing a comprehensive technical solution to meet the business requirements.
* **Project Coordinator (PC):** the PC provides administrative support to ensure the success and timeliness of project deliverables. The PC works closely with the PM and coordinates with all staff on day-to-day operations, providing support as necessary. The PC is responsible for preparing project reports and assists the PM in tracking deliverables, progress, and timelines.
* **Infrastructure / Technical Lead (IL):** responsible for the overall technical infrastructure needs and requirements. The TL supports different aspects of the project life cycle, including requirements gathering, analysis, design, development, testing and implementation. The TL will also be responsible for the overall design and configuration of the system’s security, including component security and management of system access.
* **Software / Integration Lead (SL):**  responsible for the timely coordination of all development, implementation and integration-related tasks. The SL defines and communicates all implementation/integration tasks, manages statewide rollout activities, identifies issues and, if necessary, escalates issues to the Project Management team. The SL coordinates the procurement, receipt and deployment of computer equipment and software if required. Additionally, the SL ensures that interfaces among system components are clearly defined, documented and implemented.  Additionally, the SL is responsible for developing technical components of the CNMI P20W SLDS.
* **Business Systems Analyst / Tester (BSA),:** responsible for driving the functional and technical design and implementation for SLDS involving K-12, higher education and labor data. Responsible for gathering, documenting and analyzing business requirements and processes. Works closely with all teams to test the system throughout the development and testing phases.

## 14.2 Staff Resource Timeline

The following staff resource timeline aligns the staff resources to their anticipated dates of participation in the CNMI P20W SLDS Project.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Phase I** | | | | | | | | | | | | | | |
| **Month** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** | **13** | **14** |
| **Month** | **Apr** | **Jun** | **Jul** | **Aug** | **Sep** | **Oct** | **Nov** | **Dec** | **Jan** | **Feb** | **Mar** | **Apr** | **May** | **Jun** |
| **Year** | **2021** | **2021** | **2021** | **2021** | **2021** | **2021** | **2021** | **2021** | **2022** | **2022** | **2022** | **2022** | **2022** | **2022** |
| **Resource (not singular, represents resources under lead)** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Project Manager** | 0.9 | 0.9 | 0.8 | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 | 0.8 | 0.8 | 0.8 | 0.9 |
| **Project Coordinator** | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.7 | 0.8 | 0.8 | 0.7 | 0.5 | 0.8 | 0.8 |
| **Infrastructure/ Technical Lead** | 0.5 | 1 | 1 | 1 | 0.75 | 0.75 | 0.25 | 1 | 1 | 1 | 0.5 | 0.5 | 1 | 1 |
| **Software / Integration Lead** | 0.2 | 0.2 | 0.2 | 1.5 | 1.5 | 1.5 | 1.5 | 2 | 2 | 1.5 | 1 | 1 | 1.5 | 1.5 |
| **Business Systems Analyst** | 1 | 1 | 1 | 1.5 | 1.5 | 1.5 | 1.5 | 2 | 2 | 2 | 0.75 | 0.75 | 1.5 | 2 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Phase II** | | | | | | |
| **Month** | **12** | **13** | **14** | **15** | **16** | **17** |
| **Month** | **Jul** | **Aug** | **Sep** | **Oct** | **Nov** | **Dec** |
| **Year** | **2022** | **2022** | **2022** | **2022** | **2022** | **2022** |
| **Resource (not singular, represents resources under lead)** |  |  |  |  |  |  |
| **Project Manager** | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 |
| **Project Coordinator** | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 |
| **Infrastructure/ Technical Lead** | 0.75 | 0.75 | 0.5 | 0.5 | 0.75 | 0.75 |
| **Software / Integration Lead** | 1 | 1 | 1 | 1 | 1.5 | 1.5 |
| **Business Systems Analyst** | 1.25 | 1.5 | 1.25 | 1 | 2 | 2 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Phase III** | | | | | | | | | | | | |
| **Month** | **20** | **21** | **22** | **23** | **24** | **25** | **26** | **27** | **28** | **29** | **30** | **31** |
| **Month** | **Jan** | **Feb** | **Mar** | **Apr** | **May** | **Jun** | **Jul** | **Aug** | **Sep** | **Oct** | **Nov** | **Dec** |
| **Year** | **2023** | **2023** | **2023** | **2023** | **2023** | **2023** | **2023** | **2023** | **2023** | **2023** | **2023** | **2023** |
| **Resource (not singular, represents resources under lead)** |  |  |  |  |  |  |  |  |  |  |  |  |
| **Project Manager** | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 |
| **Project Coordinator** | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| **Infrastructure/ Technical Lead** | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 |
| **Software / Integration Lead** | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 |
| **Business Systems Analyst** | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 |

## 14.3 Staff Management Process Risk Identification & Mitigation

To reduce program and task risks, each staff resource is responsible for communicating status report to the PC including:

* Tasks completed;
* Upcoming tasks;
* Risks

Additionally, each resource will work closely with the PM or their lead to ensure each task’s success and timely completion. More details on status reports can be found in the Communications Plan.

## 14.4 Resource Change Plan

To ensure program success, DBDriven will employ the following steps, in the event a resource becomes unavailable or unexpectedly exits the project:

* PM will temporarily reassign tasks that the unavailable resource is responsible for until the unavailable resource becomes available again. Task reassignment will be based upon skills required to meet project requirements.
* If the resource unexpectedly exits the project, DBDriven will search for a new staff member to replace the exiting staff member in no more than two months’ time. The new resource staff will meet the qualifications necessary for the role. During the staff member replacement process, DBDriven will supplement the vacant position in the short term.

##### Appendix A. Change Request (CR) Form

***SAMPLE***

**CHANGE ORDER REQUEST FORM**

**Commonwealth of the Northern Mariana Islands**

**Agency Contact Information**

|  |  |  |  |
| --- | --- | --- | --- |
| **Contractor:** | **Contact Name and Title** | **Phone Number** | **Email** |
| **Date** | **Solicitation Number** | **Change Order Number** | |
| **Change Request is based on the following reason:**   * Increase or decrease in actual quantities needed from the original solicitation or contract estimates * Agency customer requested change within the original scope of work * Agency customer requested change outside of the original scope of work * Work details not identified in the original scope of work * Vendor recommended changes * Other\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_   **Description of Change:**   * What is going to change? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_   \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_   * Is it a new feature? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_   \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_   * Is it a change from existing requirements?\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_   \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_   * Will other requirements be affected? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_   \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_   * Other comments\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_   \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | |
| **Cost and Schedule Impact of Change**   |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | Change Request | REQUEST NUMBER | AMOUNT | | DAYS | | | | INCREASE | DECREASE | INCREASE | DECREASE | | |  |  |  |  |  |  | |  |  |  |  |  |  | |  |  |  |  |  |  | |  |  |  |  |  |  | |  |  |  |  |  |  | |  |  |  |  |  | | |  |  | Amount Days Date | | | | | ORIGINAL CONTRACT | | |  |  |  | | TOTAL PREVIOUS CHANGE ORDERS | | |  |  |  | | TOTAL THIS CHANGE ORDER | | |  |  |  | | **ADJUSTED CONTRACT** | | |  |  |  |   **Approval of this Change Order does not take the place of any required contract amendments. DBDriven must verify whether a contract amendment is required prior to authorizing and starting any work.**  **ACCEPTANCE OF CHANGE:**  **Authorized Signatures**  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_\_\_\_\_  State Agency Representative Name and Title Signature Date  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Contractor Name and Title Signature Date | | | |

##### Appendix B: Change Control Log

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| CNMI P20W SLDS  Project Change Request Log | | | | | | | | |
| **CHANGE REQ. NO.** | **DATE**  **SUBMITTED** | **DESCRIPTION OF CHANGE** | **Priority** | **ESTIMATED COST** | **ESTIMATED COMPLETION DATE** | **APPROVED/REJECTED** | **DATE COMPLETE** | **COMMENTS** |
|  |  |  |  |  |  |  |  |  |
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##### Appendix C. Weekly Project Status Update

**General**

**Project Period:**

* May 2021

Project Status Summary Key:

**Green**: On track **Yellow**: +/- 5% **Red**: +/- 10%

|  |  |  |  |
| --- | --- | --- | --- |
| Scope | Schedule | Reports | Risks |

**Project Update**

**Accomplishments**:

**Upcoming Tasks:**

**Schedule:**

**Risks**:

**Issues**:

**Next Deliverables**

**Next Week Meetings: TBD**

**Availability of Personnel:**

##### Appendix D: Risk Register Template

