

ATTACHMENT A:
BMISS Platform System Overview

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1 Introduction and Overview

This document provides an overview of the BHW Management Information System Solution (BMISS) Platform, its systems and modules from a logical and functional perspective. The functional modules described are logical groupings of supported business functionality. Business services central to the BMISS Platform are explained and background information about the platform, the Bureau of Health Workforce (BHW) and the mission of the Health Resources & Services Administration (HRSA) is provided for context.

1.1 Mission and Focus

HRSA, an Operating Division of the U.S. Department of Health and Human Services (HHS), is dedicated to improving access to health care to people who are geographically isolated and/or economically or medically vulnerable. HRSA supports the training of health professionals, the distribution of providers to areas where they are needed most, and improvements in health care delivery.

BHW is one of many Bureaus and Offices that fall under the HRSA umbrella. BHW is specifically tasked with improving the health of underserved and vulnerable populations by strengthening the health workforce and connecting skilled professionals to communities in need. Specific objectives include:

- (1) Support an increase in the number of health care access points to expand the availability of services to underserved, disadvantaged, geographically isolated, and special needs populations;
and
- (2) Facilitate and support the recruitment, placement, and retention of primary care and other providers in underserved communities (including through telehealth) in order to address shortages and improve access to care.

These objectives are fulfilled through several Federal programs and strategic partnerships that are closely aligned with HRSA's mission. Scholarship and loan repayment programs help underserved communities recruit and retain primary, mental, and dental health care providers. The designation of Health Professional Shortage Areas (HPSAs), Medically Underserved Areas (MUAs) and Medically Underserved Populations (MUPs), are areas experiencing a shortage of health professionals and are used for the placement of loan repayment and scholarship awardees. Finally, the Health Workforce Connector (HWC) is an online resource and recruitment tool that connects and engages anyone who is interested in improving the health of underserved communities. These programs are all supported by the BMISS Platform, which is managed by BHW's Division of Business Operations (DBO).

1.2 Background

The BMISS Platform was established to develop systems that will support BHW business needs through a single source of data collection and automation of task driven processes. The BMISS Platform is mission-important, and designed to ensure that programs administered by BHW are managed efficiently and in compliance with mandated agency-wide and Federal policies and procedures. The BMISS Platform is inclusive of three distinct systems and numerous initiatives that establish a framework for ensuring the platform meets emerging business needs and conforms to technology standards and best practices. The BMISS Platform also hosts self-service customer service portals, compliance measures through automation, task management features, and workflow schema. The system supports more than 100,000 external user accounts and 300+ internal users.

1.3 Technical Design Principles

The following are goals for the technical architecture design of the BMISS Platform:

- **Scalable:** Scalability is the ability of the platform to scale both up and down to support varying numbers of users or transaction volumes. The application should be able to scale horizontally (by adding more servers) or vertically (by increasing hardware capacity or software efficiency).
- **Flexible:** Flexibility is the ability of the application to adapt and evolve to accommodate new requirements and incrementally expand to other BHW programs without affecting the existing operations. This relies on a modular architecture, which isolates the complexity of integration, presentation, and business logic from each other in order to allow for the easy integration of new technologies and processes within the application.
- **Interoperability:** Interoperability through service-oriented architecture (SOA), or microservices, which decomposes an application into smaller modular services that can be re-used and makes the system easier to understand, develop, test and more resilient to architecture erosion. BMISS Platform common services are detailed in *Attachment F BMISS Platform Architecture*.
- **Standards-Based:** Portal services will comply with established industry standards. The standards-compliance will not only apply to application development but also to design, platform infrastructure. Examples of standards include web services, HTML, XML, J2EE, and JSF.
- **Performance:** The architecture and technical design should ensure five seconds or less response time of any web requests.

Currently, the BMISS Platform supports two architecture styles - monolithic and microservices. The initial iteration of the application was built using the monolithic architecture style, which supports functionality for loan repayment and scholarship programs, sites, and schools. Some of the recent functionality, such as shortage designation, provider management, and the health workforce connector was built using service oriented, or microservices, architecture.

1.4 BMISS Platform Overview

The BMISS Platform consists of three systems to include BMISS, the Health Workforce Connector, and the Shortage Designation Management System (SDMS). The BMISS Platform also hosts portals for both internal and external users, functional modules supporting business functionality, common services necessary for functional modules and security compliance, and data repositories for transactional and data reporting. The BMISS Platform interfaces with multiple internal and external systems for exchanging data. *Figure 1* depicts a high-level overview of the BMISS Platform.

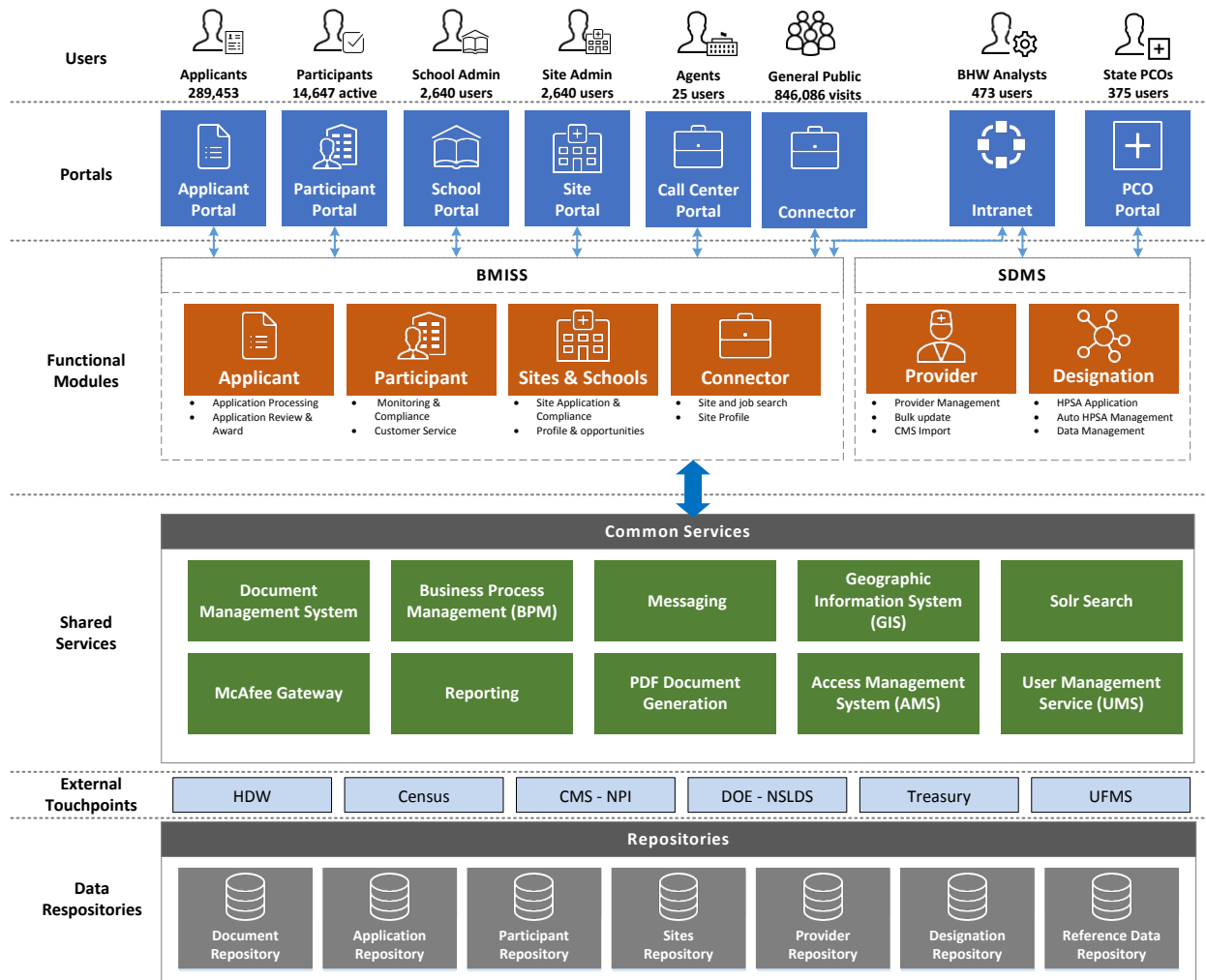


Figure 1 BMISS Platform

2 System Users and BHW Program Portal

2.1 System User Groups

The majority of BMISS Platform end users are external, meaning that they do not have HRSA issued credentials and access the system securely via a dedicated portal environment through the internet. Authentication for external users is accomplished using the custom-built User Management Service (UMS). BHW staff access the BMISS Platform through an internal environment using HRSA network credentials. Internal users require a PIV card to access the system and authentication is facilitated through HHS' Access Management System (AMS).

User Type	Description
Applicants	Medical professionals or students interested in applying to one of seven BHW programs.
Participants	A subset of applicants who receive a program award. Participants use the BHW Customer Service/Participant Portal to interact with BHW program Analysts during their tenure with the program.
School Administrators	Representatives of schools participating in BHW Scholarship programs. School Administrators are responsible for interacting with BHW Analysts regarding their students' participation in scholarship programs.
Site Administrators	Representatives of medical facilities participating in BHW programs who are responsible for interacting with BHW Analysts to support the program. Site Administrators are also known as Site Points of Contact (POCs).
BHW Customer Care Center Agents	Customer service call center agents who provide Tier 1 customer support.
General Public	Anyone who is interested in locating medical facilities and job opportunities in underserved communities.

BHW Analysts/Federal Program Staff	Program analysts, support staff, and senior staff that have program management and oversight responsibilities.
State Primary Care Offices (PCOs)	State PCOs are representatives from State Primary Care Offices. They are responsible for identifying and managing medically underserved areas within their states and participate in the review and evaluation of NHSC site applications.

2.2 Portals

The BMISS Platform establishes portal environments that act as gateways for non-Federal customers and partners to engage with HRSA on program related activities. Each portal environment is targeted for a specific group of users and includes functionality to support their business needs. Access to the portals is granted through a user authorization schema whereby authorized users are assigned roles/privileges. Information on roles/privileges associated with a specific user is stored in the database. The complete set of user roles are detailed in *Attachment D: BMISS Platform User Roles*.

Portal descriptions are provided in the table below.

Portals	Description
Applicant Portal	The Applicant Portal allows users to apply for one or more of BHW's loan repayment and scholarship programs. Currently, six programs are supported: NHSC Loan Repayment, NHSC Scholarship, NURSE Corps Loan Repayment, NURSE Corps Scholarship, Faculty Loan Repayment, and Students to Service Loan Repayment. The Applicant Portal also supports each program's continuations application process.
Participant Portal	The Participant Portal is dedicated to applicants that applied to one of the loan repayment and scholarship programs and received an award. It allows program participants to communicate with BHW staff and exchange information regarding compliance, monitoring, and support.
School Portal	The School Portal allows a school point of contact to submit financial information for students that have applied for BHW scholarships.
Site Points of Contact (POC) Portal	The Site POC Portal is a self-service environment for Site Administrators to engage with BHW and perform key functions necessary to support BHW loan repayment and scholarship programs. This portal also allows Site POCs to

Portals	Description
	create and manage site profiles and post open positions on the Health Workforce Connector.
Call Center Portal	The Call Center Portal allows agents to provide Tier 1 customer service support. The portal enables agents to unlock portal accounts and perform password resets for external customers. It also allows agents to update an external customer's contact information.
Primary Care Office (PCO) Portal	The Primary Care Office (PCO) Portal enables state representatives to engage in system driven activities and tasks for NHSC Sites and shortage designations. Activities include providing review feedback for NHSC Site applications and the creation and submission of HPSA and MUA/P shortage designation applications.

3 Functional Modules

The functional modules are logical groupings of supported business functionality. Modules are listed and described according to their parent system: BMISS, SDMS, or HWC. Each module description includes its purpose, features, supported users, unique services, and business rules governing the functional module.

3.1 BHW Management Information System Solution (BMISS) Functional Modules

The BHW Management Information System Solution (BMISS) Platform supports the complete award life cycle for loan repayment and scholarship programs. The award life cycle includes application review, ranking, award and obligation, and monitoring and compliance; all discussed within context of the functional modules that comprise the system. Functional modules include: Applicant, Participant, and Sites and Schools.

Each of the modules are associated with services and functionality designed to meet the business needs of their respective systems and supported programs. The modules are discussed in the following sections.

3.1.1 Applicant Module

The applicant module supports seven different types of loan repayment and scholarship applications for the following programs:

1) National Health Service Corps Loan Repayment Program (NHSC LRP)

The purpose of the NHSC LRP is to recruit and retain medical, nursing, dental, and behavioral/mental health clinicians in communities of need in designated Health Professional Shortage Areas (HPSAs). The program is open to licensed primary care, dental, and mental and behavioral health providers who are employed or who have accepted an offer of employment at an NHSC-approved site. The application package, available at:

<https://nhsc.hrsa.gov/loanrepayment/>, includes the required application forms and the Application Program Guidance (APG) that contains eligibility criteria, qualification factors, funding preferences, service requirements, and application information.

2) National Health Service Corps Scholarship Program (NHSC SP)

The purpose of the NHSC SP is to provide scholarships to students pursuing training in primary care and dentistry. In return for financial assistance, the scholarship recipient agrees to provide one year of primary health services for each full or partial school year of scholarship support received. Following graduation and/or residency, the scholar must serve their obligation at an NHSC-approved site located in a HPSA within the United States or U. S. territory. The application package, available at: <https://nhsc.hrsa.gov/scholarships/overview.html>, includes the required application forms and the APG that contains eligibility criteria, qualification factors, funding preferences, service requirements, and application information.

3) Students to Service Loan Repayment Program (S2S)

The NHSC S2S LRP provides loan repayment assistance to medical (MD and DO) and oral health students (DMD and DDS) in their last year of school, in return for a commitment to provide primary health care and dental services at approved NHSC sites in eligible HPSAs of greatest need for a period of three years. The NHSC S2S LRP application packages are available at: <http://www.nhsc.hrsa.gov/loanrepayment/studentstoserviceprogram/>, and include the required application forms and the APG, which contains eligibility criteria, qualification factors, funding preferences, service requirements, and application information.

4) NURSE Corps Loan Repayment Program (NCLRP)

The NCLRP offers registered nurses (RNs) and advanced practice registered nurses (APRNs) substantial financial assistance to repay a portion of their qualifying educational loans in exchange for full-time service either at a Critical Shortage Facility (CSF) or an eligible school of nursing. The NC LRP application package, available at: <https://bhw.hrsa.gov/loansscholarships/nursecorps/lrp>, includes the required application forms and the APG, which contains eligibility criteria, qualification factors, funding preferences, service requirements and application information.

5) NURSE Corps Scholarship Program (NCSP)

The Nurse Corps SP enables students accepted or enrolled in a diploma, associate, baccalaureate, or graduate nursing program to receive funding for tuition, fees, and other educational costs in exchange for working at eligible Critical Shortage Facilities (CSFs) in an eligible HPSA. Upon graduation, NCSP recipients work at these facilities for one year for each year of scholarship support with a minimum of at least two years. The NCSP application package is available at: <https://bhw.hrsa.gov/sites/default/files/bhw/nurse-corps-guidance.pdf>, and includes the required application forms and the APG. The APG contains eligibility criteria, qualification factors, funding preferences, service requirements, and application information.

6) Faculty Loan Repayment Program (FLRP)

The Faculty Loan Repayment Program provides individuals loan repayment, while serving as a faculty member in an accredited and eligible health professions school. The application package, available at: <https://bhw.hrsa.gov/loansscholarships/flrp>, includes the required application forms and the APG that contains eligibility criteria, qualification factors, funding preferences, service requirements, and application information.

7) Native Hawaiian Health Scholarship Program (NHHSP)

The NHHSP is a support service-oriented scholarship program for Native Hawaiian college students interested in serving their Native Hawaiian community as primary health care professionals. In return for the scholarship, the recipient agrees to provide one year of full-time service commitment (minimum of two years; maximum of four-year commitment) for each full or partial school year of scholarship support received. Participants serve at eligible settings to include one of the five Native Hawaiian Health Care Systems, a HPSA in Hawaii, a medically underserved area in Hawaii, or in a geographic area or facility in the State of Hawaii, that has a similar federal designation. The NHHSP application packages are available at: <http://www.nhhsp.org/>, and include the required application forms and the APG that contains eligibility criteria, qualification factors, funding preferences, service requirements and application information.

These programs were enacted to advance HRSA's mission and to allow the agency to recruit and retain health care practitioners in exchange for their service in communities experiencing a shortage of health professionals.

Online applications for these programs were developed using a shared application methodology. This methodology streamlines development for online applications by allowing each application to apply unique business rules while also leveraging shared features and services. All applications described are electronic, with the exception of the Native Hawaiian Health Scholarship Program (NHHSP) application, which is not supported by the shared application service. The BMISS Platform only supports the obligation process for NHHSP.

Shared application services are explained below and are grouped according to the lifecycle of an application, which begins with the applicant creating and submitting an application to HRSA, and concludes with HRSA reviewing submitted applications and making a decision regarding award.

Application Creation and Submission Process

Applicants begin the application process by creating an online applicant portal account and starting an application for the program in which they would like to apply. The application welcome page contains links to documents the applicant will need to reference or complete prior to submission.

Each application has several sections that the applicant needs to complete in order for the system to assess eligibility. The BMISS Platform will inform the applicant if they do not meet eligibility requirements. All sections of the application must be complete and all required documents uploaded for the applicant to submit the application. Applicants have the ability to save or edit their application at any time before the application cycle closes. After the application cycle closes, applicants can continue to access their online application to view their responses, current application status, or withdraw their application. The application creation and submission process varies by loan repayment and scholarship programs as explained below.

Loan Repayment Application Features:

The following application features apply to the National Health Service Corps, Nurse Corps, Students to Service, and Faculty loan repayment applications, except where noted.

- (1) **Employment Verification** – Applicants must verify their employment at a National Health Service Corps or Nurse Corps approved site. Faculty Loan repayment applicants are required to verify employment at an accredited academic institution. Employment verification is system driven and is initiated by the applicant via the application. The verification is then electronically routed to Points of Contact (POCs) at the applicant's location of employment. The BMISS Platform sends an email notification to the site POC requesting that they create a portal account and complete the employment verification. After the Employment Verification is complete, it is linked to the application. This process does not apply to individuals applying to the Students to Service loan repayment program.

- (2) **Loan Verification** – Applicant's must provide documentation of qualifying loans that are contemporaneous with the education received. Applicants can submit their loans electronically or manually. The electronic loans functionality allows applicants to import their Federal loans from the National Student Loan Data System (NSLDS) through a partnership with the Department of Education. Applicants are directed to the Department of Education's Federal Student Aid login page and log in using their FSA ID. Applicants will be automatically redirected to his/her application after authentication.

Scholarship Application Features:

The following application features apply to the National Health Service Corps and Nurse Corps scholarship programs.

- (1) **School Verification** – Scholarship applicants begin the application for the program they are applying to by selecting a school/degree from a pre-populated list of schools and degrees in the system. If the applicant selects a school/degree that is not accredited, the BMISS Platform will create a New School or Degree request on behalf of the applicant. The request will be sent to an internal task module for a HRSA Analyst to review. The request must be approved for the applicant to submit the application.
- (2) **Letters of Recommendation** – Scholarship applications also contain a Letter of Recommendation (LOR) module. Applicants submit the names and email addresses of two recommenders who will submit LORs on their behalf. The BMISS Platform sends an email to the recommenders with a link unique to them and the applicant. Recommenders use this link to access a module to upload the LORs. This requirement also applies to individuals applying to the Students to Service loan repayment program.

Application Review & Award Process

Once an application deadline has passed, complete and eligible applications are transferred to the BMISS Award and Review Module¹.

Loan Repayment Application Review Features:

The following application features apply to the National Health Service Corps, Nurse Corps, Students to Service, and Faculty loan repayment applications.

- (1) **Application Review and Ranking** – Submitted applications are subjected to quality reviews by HRSA to verify that applications are complete and that the applicant’s loans qualify for repayment. Once the review process is complete, qualifying applications are ranked and grouped into funding preferences. For the NHSC LRP, the BMISS Platform creates a ranking list based on the HPSA score of the applicant’s practice site. Ranking for Nurse Corps LRP applicants’ is based on their debt-to-salary ratio and HPSA score. Ranking for S2S is based on likelihood of remaining in a Health Professional Shortage Area and disadvantaged background status.
- (2) **Confirmation of Interest** – Upon verification of an applicant’s loan documentation, the program forwards a financial package detailing the amount of the award (based on verified loan amounts and estimated loan interest) to the applicant via a confirmation of interest (COI) request via the BHW Program Portal. The applicant must accept or decline the COI. During the COI process, the applicant is required to verify the accuracy of the practice site

¹ Once the application cycle closes, business rules only allow submitted and eligible applications to be transferred for review and award.

information submitted during the online application. Upon acceptance of the COI, the applicant provides BHW with bank account and routing information and e-signs the contract via the BHW Program Portal. Financial management analysts then create obligation batches and initiate the obligation process.

Scholarship and loan repayment contracts are not valid until the Secretary's designee in the Office of Federal Assistance Management (OFAM) counter-signs them during the obligation process. This step officially ratifies the contract and the participant officially begins their service obligation on the day the Secretary's designee signs the contract.

Scholarship Application Review and Award Features:

The following application features apply to the National Health Service Corps and Nurse Corps scholarship programs.

- (1) **Application Review and Ranking** – Once the scholarship application deadline passes, the scholarship branch chief initiates review of applications by transferring applications to the BMISS Award Review Module. In this module, applications undergo a standard review by scholarship program analysts to verify the completeness of the application, verify that applicants uploaded the required documentation, and identify whether the documentation supports applicant responses. These reviews determine an applicant's completeness and eligibility for the program. Applications that are deemed eligible during the initial review process will be sent to an external review panel. The panel will score the application based on evaluation criteria. Panel review scores are captured, and are used as part of the final ranking.
- (2) **Confirmation of Interest** – When an applicant is selected for award, a HRSA Analyst will initiate a Confirmation of Interest (COI) to the applicant's portal account. Applicants will complete the COI to confirm that they are still interested in the award, submit additional documents, and sign a contract. Upon submission of COI, program performs a final review of the application before the obligation process begins. The financial analyst then creates obligation batches, and initiates the obligation process.

Scholarship and loan repayment contracts are not valid until the Secretary's designee in the Office of Federal Assistance Management (OFAM) counter-signs them during the obligation process. This step officially ratifies the contract and the participant officially begins their obligation on the day the Secretary's designee signs the contract.

3.1.2 Financial Processing Module

The financial processing module covers multiple functions, including:

- Obligation creation, review and approval for new awards, continuations, modifications and de-obligations
- Review and approve loan repayment and stipend payments for participants
- Review and approve tuition payments for scholars
- Transmit obligation and payment files to HHS' Unified Financial Management System (UFMS)

The BMISS Platform acts as an approval system for obligations and awards, while the Unified Financial Management System (UFMS) is the system of record for financial transactions for BMISS Platform managed programs. UFMS is a centralized system that is managed by the HHS Program Support Center (PSC). PSC interfaces with many HHS software applications and supports the finance and accounting side of the operations run by many programs within HHS. Communication with the system is typically done through data files formatted to comply with the interface specifications agreed upon by the relevant parties. PSC maintains interface specifications to accommodate unique business needs on a unilateral basis with each application whose data it consumes. UFMS is responsible for the tracking of obligation balances, the disbursement of payments, the dispensation of electronic tax forms, and other financial activities. The synchronization of this data is handled through regular data file imports and exports.

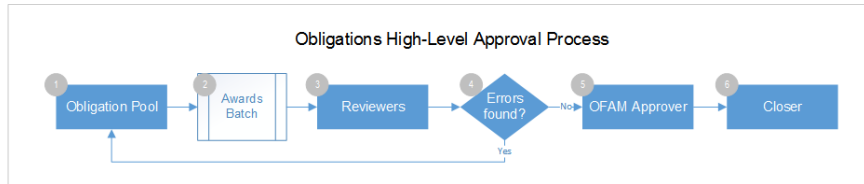
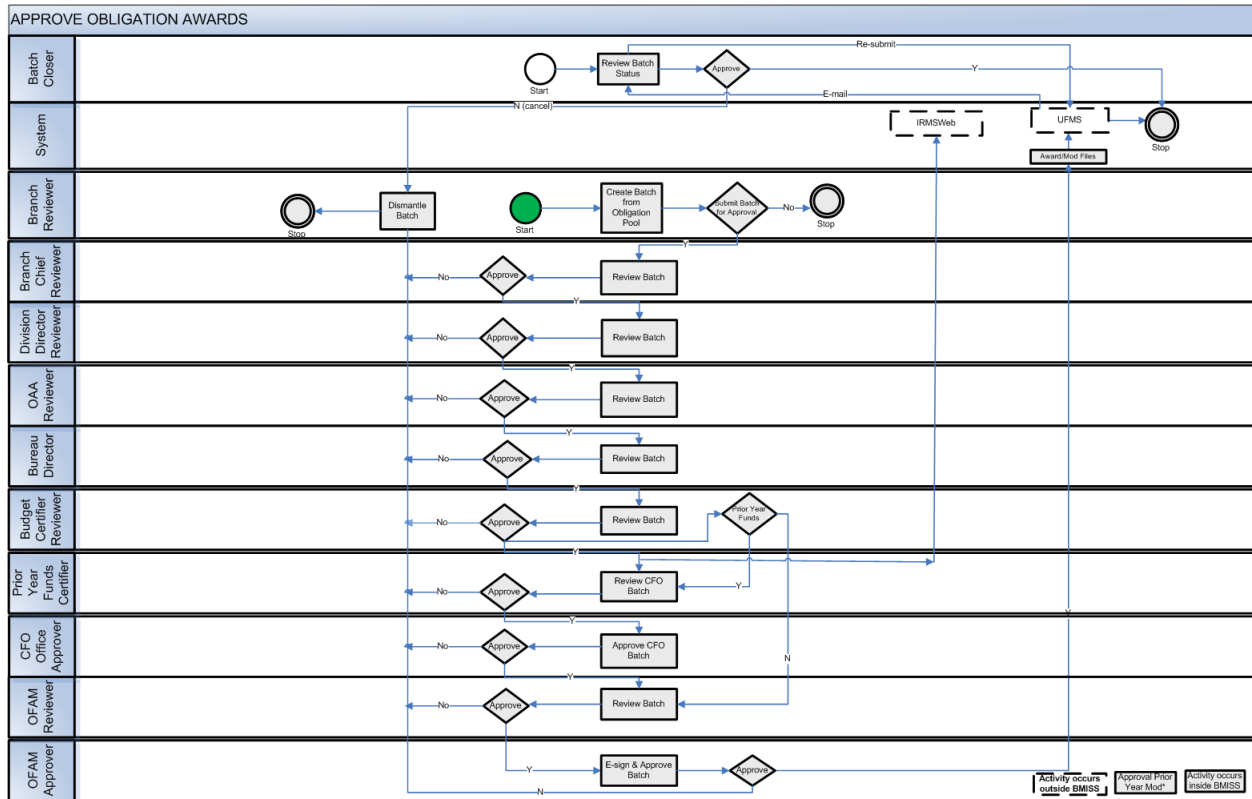
Obligations

There are four kinds of obligations:

- New Awards; Awards made based on review of applications.
- Continuations; Awards based on review of continuation requests for existing participants.
- Modifications; Additional funds for participants who have already been awarded.
- De-obligations; De-obligation of funds, such as when an award for a participant is cancelled.

The BMISS Platform supports a multi-step approval process for these obligations. The approval process may require 5-8 approval steps. The workflow is described below and depicted in *Figure 3*

A first level reviewer from a BHW program creates a batch of obligation awards from the obligation pool and submits it to several reviewers, a final approver, and a closer. Each reviewer reviews the obligations awards in the batch checking various award information for accuracy. If an award has an error or the reviewer does not want the obligation in the batch, the individual award can be returned to the obligation pool. The option to dismantle the entire batch and return all awards in the batch to the obligation pool is also available. If a batch is acceptable, the reviewer approves the batch and it goes to the next reviewer. After the reviewers complete their review, the batch goes to the final approver with signature authority to review and e-sign each award in the batch. Once all the awards in the batch are e-signed, the batch is submitted electronically to UFMS via a drop box for processing. Once program is notified that a batch processed successfully, a program analyst closes the batch. Individual awards that failed to process can be removed from the batch.



1. All the obligation awards and award deobligations ready for the approval process. In the obligation pool, the decision as to whether or not an applicant/participant obligation obligation/deobligation has already been made and all information required for the obligation/deobligation exist. The requirements for obligation awards and award deobligations in the pool are defined.
2. A branch reviewer compiles the Award Batch and submits to several reviewers. The batch is a file that contains Obligation Awards that are grouped together by Fiscal Year, Funding Type, Award Type and Contract Type.
3. Each reviewer reviews the obligations awards in the batch checking various award information for accuracy. See 'Roles' for a listing of specific reviewers in the process.
4. If an award has an error or the reviewer does not want the obligation in the batch, the individual award can be selected to be returned to the obligation pool. The option to dismantle the entire batch and return all awards in the batch to the obligation pool is also available.
5. If a batch is acceptable, the reviewer approves the batch and it goes to the next reviewers. After the reviewers complete their reviews, the batch goes to the OFAM Approver to review and e-sign each award in the batch.
6. Once all the awards in the batch are e-signed, the batch is submitted electronically to PSC via the UFMS drop box for processing. Once PSC notifies the outcome of the processing, the Batch Closer does or removes an award from the batch to close out the batch.

Figure 3 Obligation Approval Workflow

Payments

There are two types of payments:

- Loan repayment and stipend payments to participants
- Tuition payments to schools

Once awarded, the BMISS Platform will automatically generate a payment schedule for each participant based on their program's business rules. Some programs pay their awardees in a single lump sum, and others pay on a monthly basis.

Loan repayment and stipend payments are reviewed in payroll task batches. One new task is generated per program on the first of every month. This task will contain all payments scheduled for the current month or any point in time in the past. Loan repayment and stipend payments go through a two-step review process. At the first level review step, an analyst can edit payment amounts and cancel or reschedule payments. The BMISS Platform has business rules to prevent payments to participants with insufficient funds or possible compliance issues from being approved without additional analyst review. Those payments will be flagged on a specific section of the payroll task, and all issues flagged must be resolved before the payment can be approved with the main task.

Ad-hoc tasks can be kicked off for one or more payments after the first of the month as needed. Ad-hoc tasks are subject to the same review rules as the main tasks.

Payment schedules for tuition payments are not created in advance since these are paid as invoiced by the school. After a tuition invoice has been received by BHW, an analyst enters the payment information into a tuition invoice review task. Tuition payments go through a three-step review process. Once the tuition invoice has been reviewed by the Analyst, Quality Control, and Supervisor reviewers, the payment is ready to be batched. Analysts with the correct roles can then manually create the payment file for that program and transmit the file to UFMS for processing. Files are transferred via SFTP into the UFMS dropbox.

Once approved, all loan repayment, stipend and tuition payments are securely transmitted to UFMS via SFTP into a drop box. Payments to participants are made against the banking information transmitted with their obligations. Tuition payments are made directly to schools on the scholars' behalf.

3.1.3 Participant Monitoring and Compliance Modules

The suite of functionality described in this section pertains to the management, oversight, and compliance activities of program participants. Most of the modules described are system related processes applicable to participants while they are fulfilling their contractual agreement or are in service. Modules apply business rules and requirements that are driven by application program guidance.

3.1.3.1 Inquiries

Inquiries are a highly used functionality that allow program participants to communicate directly with BHW staff. Inquiries are used to record and track any and all documentation that are not part of other functionality within the system.

Purpose

Inquiries were designed to fulfill two separate business processes;

- 1) External Inquiries, a customer service process designed to document communication between participants and Program; and
- 2) Internal Inquiries, designed to track issues and workflows that had not yet been built into the system.

User-Base

Inquiries are available to all program participants in the “Ask a Question” page on the BHW Customer Service Portal.

Module Description

Participants have the option of uploading documents to an inquiry and can view responses and enter additional comments to a submitted inquiry by accessing it through the Recent Requests section.

Inquiries are routed to specific BHW Division/Branches based on several factors including the participants program, status, and subject. BHW staff can open, close or reassign both types of inquiries and they can initiate communication or reply to a participant through an external inquiry. Open inquiries appear on the task dashboard and can be accessed or assigned to other BHW staff through the dashboard or through the inquiry itself.

Routing is restricted to individuals within groups, which is consistent with all other tasks in the BMISS Platform.

3.1.3.2 Suspensions

The BHW may grant a suspension from a program’s service obligation where compliance with the participant’s service obligation (1) is temporarily impossible or (2) would temporarily involve extreme hardship and enforcement of the service would be unconscionable.

Purpose

To process suspension requests for In-Service participants in need of temporary relief in fulfilling his/her service commitment. There are three primary categories for suspensions: (1) leave of absences for medical or personal reasons; (2) maternity, paternity, or adoption leave; and (3) call to active duty for reservists in the armed forces.

User-Base

Suspensions are available to all active program participants.

Module Description

Requests are submitted via the BHW Customer Service Portal. Upon submission, the request is routed to the participant’s site for review. The site completes the review in the Site Administrator Portal and then

the request is either routed to BHW Staff or is automatically approved. At the end of a participant's suspension period, the BMISS Platform sends out confirmation tasks to the participant and site. The system allows for an extension of the suspension if needed. The participant is notified of all determinations through the BHW Customer Service Portal.

The system allows BHW staff to review submitted requests and to initiate or complete sections of a request. Depending on the type of request, multiple levels of review may be required and the functionality allows for participants to begin or end their suspension while not assigned to a site. Once approved, the participant's status, ISVs, and if needed end date are all adjusted.

3.1.3.3 Voided Contracts

If, after a contract is awarded, it is determined that the government did not have the statutory authority to enter into the contract, then the contract is determined to be void.

Purpose

To allow the NHSC LRP to document the Void process and update the Participants status to Void upon completion of the task.

User-Base

Void functionality is only available for BHW staff working with the National Health Service Corps (NHSC) Loan Repayment (LRP) Program.

Module Description

If a program determines that it must void a contract, BHW staff initiates a void request, uploads relevant documentation, and submits the request for review and then approval. All future payments to the participant need to be suspended and de-obligated prior to approval. If the participant has received funds, they will need to return the funds.

3.1.3.4 Termination Module

A request to terminate a contract occurs when the participant chooses to terminate the contract within a specified grace period.

Purpose

To process termination requests for NHSC LRP participants who wish to terminate his/her contract.

User-Base

Terminations are only available to National Health Service Corps (NHSC) Loan Repayment (LRP) Program participants in the BHW Customer Service Portal.

Module Description

Upon submission of a participant's formal agreement to terminate his/her contract, the system automatically voids any payments on the participant's payment schedule or payroll. If any funds have

been disbursed, the system informs the participant that payment needs to be returned in order to process the request.

The system allows BHW staff to review submitted requests or to initiate a request on behalf of a participant. During review BHW staff are required to upload relevant documentation and submits the request for approval. Prior to the approval of a request, all remaining funds need to be deobligated and any disbursed funds must be returned.

3.1.3.5 Waivers

A waiver permanently relieves the participant of all or part of their contractual commitment.

Purpose

To allow BHW staff to document and track the Waiver request process and to update a Participants status to Waived-Full or Waived-Partial upon the completion of the task.

User-Base

The Waiver functionality is only available to BHW staff.

Module Description

Program participants request Waivers through email or an inquiry. After receiving a request, BHW staff submits an official waiver recommendation by initiating a Waiver request within the system. At the conclusion of the request, BHW staff upload related documents to the request, enter the decision of Waived-Full, Waived-Partial, or Denied, and then close out the task.

3.1.3.6 Defaults

The BHW will place program participants who breach their contract, either by failing to begin or complete their contractually obligated service, in default. After BHW places a participant in default, the participant no longer has a service obligation, only a monetary debt. In some instances, BHW may afford defaulters the opportunity to satisfy their debts by returning to service, in lieu of monetary repayment.

Purpose

To document, track, and process the creation and completion of default tasks for Program Participants that have breached their contract and need to be placed in Default.

User-Base

The Default functionality is only available to BHW staff.

Module Description

BHW staff begin the default process by initiating the default service request within the system to document the situation. Within the request, BHW staff are able to review the participant history, the number of days served/un-served as calculated by the system, upload all documentation and

communication supporting the default recommendation, and link any inquiries related to the default. The required supporting documentation may vary depending on the default type.

After submission, the task is routed through an initial review process for further investigation. Once it is determined that the participant has breached their contract, a calculation of remaining service credit and the default date is completed using the system calculation. Then several steps occur outside of the system and are documented within the request, these steps include the creation of a final audit and summary worksheet as well as the drafting and sending of a signed default memo to the Debt Collection Center to establish an account and collection of the debt. Upon confirmation of the collection notice, the task is routed through a secondary review process and upon approval the participant's status is updated to Default > Repayment. The Default case will still be viewable within the system and the request will remain open until the Default case is completed.

After the Default has been approved a new Completion Information section is added to the Post Review Screen of the Request. In order to complete the Default, BHW staff must complete this section by selecting a Reason for Completion, completing all required fields related to the reason selected, and create a completion task within the request. After the task is created it is routed through several layers of review and upon approval the participant's status is updated to Default > Complete. Users can view the participant's Default record on the participant's profile where all information will be preserved.

If the participant's Reason for Completion is Return to Service, a new participant record is created. The new active participant record will have a (D) in front of the participant's status so that users are aware that the participant was previously in Default. The old defaulted participant record is preserved and viewable to BHW staff.

3.1.3.7 Debt Estimator Service Process

A debt estimate provides a participant with an approximation of his/her debt obligation if he/she were to breach his/her contract. Actual invoices for the official debt amount are only provided after participants are officially placed in default and are provided outside of the system.

Purpose

Provides participants and BHW analysts with an estimate of the debt that will incur if the participant defaults on their contractual obligation. Each Program has their own unique business rules and calculations for determining debt.

User-Base

The debt estimator is available to participants of the National Health Service Corps (NHSC) Scholarship (SP), Loan Repayment (LRP), and Students to Service (S2S) Programs and the NURSE Corps (NC) Scholarship (SP) and Loan Repayment (LRP) Programs.

Module Description

Debt estimates may be created by participants on the BHW Customer Service Portal via the Debt Estimator located in the financial section.

BHW staff can estimate debt amounts, manage interest rates, and generate and attach estimate letters to inquiries. The functionality to generate and attach estimate letters is available for all programs listed above except for the NHSCSP.

3.1.3.8 In Service Verification (ISV) for Loan Repayment Recipients

The BHW monitors all participants' completion of service obligations through participant submission of an In-Service Verification (ISV). All participants are required to complete an In-Service Verification (ISVs) at the conclusion of the first six months of service and then every six months after. Both participants and their site POC confirm that they are meeting the program's service requirements at the site(s) they are assigned to, as well as verify the days missed from work site(s) during the verification period.

Purpose

A fully automated service verification process between a participant and their site POC to document the participant's compliance with their Program.

User-Base

ISV's are available to all In Service Program Participants and their site POC's.

Module Description

The system automatically sends notification to the participant's email address the day after the end of the participant's six-month service period indicating that the ISV is due. Participant's access the ISV through the Customer Service Portal and confirm that they are meeting the program's service requirements at the site(s) they are assigned to, as well as verify the days missed from work site(s) during the verification period. The ISV is then automatically forwarded to the site POC to verify the participant's information. If the site POC rejects the ISV, the POC enters feedback in the comments field and returns the ISV to the participant for correction. Once the site POC approves the ISV, the status within the BMISS Platform will update to "Verified."

If ISVs are not completed and submitted within 20 days, the participant and site POC receive reminders every seven days until 60 days after the initial date from when the ISV request was issued. If a participant or site POC does not submit an ISV within 60 days, an internal inquiry is generated to notify BHW staff.

The ISV functionality for BHW staff is accessible through the Verification section of the Participant profile. The Verification section is designed to provide BHW staff with information directly related to the participant's verifications at a single glance. Verifications are grouped into assignment periods which show time spent at a site (or set of sites). For each assignment period, the system displays the period date range, the site(s) at which the participant worked and all verifications associated with those sites.

Each ISV can be accessed to view additional information including the site information and the history of the verification. BHW staff can also upload supporting documents, enter comments, and if needed cancel, resend, or verify the ISV.

3.1.3.9 In School Verification Process (ISV) for Scholarship Recipients

NHSCSP and NC SP programs require scholars to provide documentation every term that they are in school. This functionality allows BHW analysts to have a central location in the applicant's profile for all In School Verification documents, comments, and tracking points.

Purpose

Program requires scholars to remain in school and in good standing. Documents are also reviewed to ensure that the program is not paying for repeated courses, to track graduation date and confirm the scholar's discipline.

Users

The In School Verification functionality is used internally by BHW analysts to monitor a student's progress while in school.

Module Description

Scholars submit the required documentation by creating an inquiry in their portal account. BHW analysts open the inquiry, and save the documents to a location designated by the programs internal SOP.

BHW analyst's access the In School verification (ISV) from the Verification Information section on the scholar's profile. This section shows all past and current ISVs. In the open ISV, analysts can designate the term, enrollment status, and the term start and end dates. Analysts upload the required documents and add comments. Once all documents are uploaded, the analyst have the option to save the ISV, to maintain an open status, or close the ISV by clicking the Verify button.

Once the ISV is verified and closed, the BMISS Platform auto generates next verification period with a start date the day after the previous ISVs end date. The end date on the new ISV will be six months in the future, or until the graduation date, whichever comes first.

3.1.3.10 Post-Graduate Training Service Process (PGT)

NHSCSP, NCSP and S2S scholars can defer their service obligation after graduation for additional training or residency. The deferment request must be submitted and approved every year the scholar is in post graduate training. The BMISS Platform has built in business rules for submission based on each programs guidance.

Purpose

To ensure scholars in post graduate training are meeting program and obligation requirements. Some scholars are required by program to complete PGT based on their discipline

User-Base

The PGT functionality is used by scholars in the NHSC SP, NHSC S2S, and NC SP programs and BHW analysts who monitor those scholars.

Module Description

Scholars for the NHSC programs can submit their PGT requests online from their scholar portal. Each program has determined a time period when a scholar is eligible to apply for PGT and a link to request PGT appears in the scholar portal when the scholar is eligible. Scholars are required to submit their residency information and upload required documentation in the request. Alternatively, analysts can create a PGT request internally in the Service Request section of the scholar's profile. Upon creating the request, the analyst completes the residency information, and uploads required documents. For Nurse Corps scholars, analysts will create a PGT request internally in the Service Request section of the scholar's profile. Upon creating the request, the analyst completes the residency information, and uploads required documents. At this time NCSP scholars do not have the option to submit their requests online.

When the PGT service request is submitted, a reviewer task is created in the Task Dashboard. All information and documents will be reviewed by a BHW analyst with a Reviewer role, and recommended for approval or rejection. All approved or rejected requests are then sent to an analyst with an Approver role via the task dashboard. The Approver reviews all the information and concurs with the Reviewers recommendation, or returns the request to the reviewer. During the review and approval process the BHW analyst has the option to add comments, make corrections to the residency information, or void the request. When the Approver concurs with the Reviewers recommendation an approval or rejection notice will be sent to the scholar via the portal notifying them of the status

All PGT requests are displayed in the Service Request section of the Participant profile and details and documents can be viewed within each request. Residency information is also displayed by year in the Education Information section.

3.1.3.11 Continuations

A continuation is an optional, 1-year extension of a participant's obligation. This option allows participants to continue their service and allows the BHW to retain them in underserved areas. The award level is dependent upon the service status and the particular year of additional support. Participants must meet all program eligibility criteria in effect at the time they are being considered for a continuation, which includes providing documentation that all previously received payments were

applied to reduce their qualifying educational loans. If awarded, continuations do not take effect until the current obligation is completed.

Purpose

The continuation functionality was designed to create an end-to-end business process solution to manage the application and award of a Loan Repayment programs continuation. The functionality allows current participants to submit an application through the Participant module and allows HRSA staff to utilize existing functionality to manage, review, and obligate awards through the system.

User-Base

Continuations are available for the NHSC LRP, NHSCS2S & NCLRP.

Module Description

Eligible program participants access the continuation application through the Customer Service Portal. The system automatically activates the link for the application and notifies participants when they are eligible to apply for a continuation. The continuation application utilizes many of the same functionality from the initial Loan Repayment application including employment verification, electronic loans, and e-signature of the contract. The Continuation application does have one significant difference in that it does not utilize the COI functionality and has the contracts signed upon submission by the applicant

HRSA Staff use the system to manage the pre-application process to upload all related documents, schedule application open and close dates, and manage other application related activities. HRSA staff also use the system to review the applications and to send the applications to the obligation module. At times, an application may need an addendum to be signed after the submission of an application and functionality has been built that allows the Program to send applicants the addendum and e-sign the document. Once the application is in the Obligation module, the Continuations follow the same process to be awarded as the initial application.

3.1.3.12 Site Assignment Process

Participants for all programs tracked in the BMISS Platform are required to work at an approved site in order to complete their obligation to a program. Site assignment is the assigning of a site or sites and all related information to a participant's obligation in which it is expected that the participant will complete their service. Each program has their own policies and requirements that determine if a site qualifies as an approved site.

Purpose

The site assignment functionality was designed to link program participants to approved program sites to allow the points of contact for those sites to electronically verify the participant's employment and compliance to the program.

User-Base

Requests are initiated by loan repayment participants via the BHW Customer Service Portal.

Module Description

Loan Repayment participants are assigned to sites during the application process. Within the application, the applicant selects their site and initiates the employment verification that generates a task for the site point of contact in the sites module to verify the employment of the applicant. Scholarship participants are assigned to sites after they graduate from school and complete all necessary requirements to be fully licensed and eligible within their discipline and specialty. The scholarship programs utilizes the site status change functionality to initially assign scholars to an eligible site.

3.1.3.13 Site Status Change Request Process (SSCR)

Although participants are expected to fulfill their obligation at the approved service site(s) they are initially assigned to, if a participant can no longer continue working at the approved service site, they may request a site change to another approved service site. Participants should discuss their situation with their program prior to requesting a site change and the request should be approved and processed by the program prior to the participant beginning work at the new site.

Purpose

The site status change functionality was designed to allow program participants and HRSA staff to request and process a change to a participant's current site assignment. Depending on the program, the functionality can make the following changes to a site assignment:

- Transfer a participant from their current site(s) to their new site(s);
- Add or remove additional sites;
- Change the hours between sites;
- Convert a participants service type from Half time to Full time;
- Update a participants practice type; and
- Remove all sites and update a participant's status easily identify compliance issue.

User-Base

The Site status change functionality is available to all program participants that are In-Service or to Scholars that have fulfilled their educational requirements and have found employment.

Module Description

Participants must request a site change through the BHW Customer Service Portal. The electronic employment verification process used for new Loan Repayment applicants is also used for site change requests. If currently assigned to a site, the participant enters any changes in hours and the date the change will occur at their current site. If the participant needs to be assigned to any new sites, they select the site, list the hours they will be working and the date they will start. Through the Site module, the point of contact for each site will review and verify the dates to ensure that the information provided by the participant is accurate. Based on the information provided in the request from the participant and from the site point of contact the participant's site assignment, practice type, service type, and status may be updated.

The system allows HRSA staff to review submitted requests and to initiate or complete sections of a request. Depending on the information provided in the request and the policies of the program that the participant is in, approval of a request may require an addendum to be signed by the participant and counter signed by HRSA. Similar to the Continuation functionality the addendum is electronically signed by the participant and electronically countersigned by HRSA staff within the system. Upon completion, the participant's site assignment, ISVs, and if applicable status, service type, practice type, and/or obligation end date are all adjusted by the system. The participant is notified of all determinations through the BHW Customer Service Portal.

3.1.3.14 Scholar Travel and Relocation

The NHSC provides travel assistance to NHSCSP and S2S LRP recipients to attend job interviews. The NHSC also provides relocation assistance once a job offer is accepted. There are two options for relocation assistance:

- 1) Government Managed Option: With this option, household goods are packed and moved by an NHSC- contracted carrier, and the movers are paid directly by the NHSC; and
- 2) Self-Move Option: This option allows participants to arrange and pay for their own moving costs, which are then reimbursed by the NHSC. The NHSC allows up to \$10,000 for allowable expenses.

Relocation allowances may also include travel to the new location, lodging, plus meals and incidental expenses, shipping of an automobile to an overseas assignment, and advanced storage to use a storage facility to be held for no longer than 90 days prior to relocation.

Purpose

To assist with the processing, management, and tracking of Scholar Travel requests for eligible participants.

User-Base

This functionality is only available to NHSCSP and S2S LRP participants via the BHW Customer Service Portal.

Module Description

Participants select their site information and enter in their travel information along with any required documentation to support the request. Upon submission, a task is generated and made available on the Task Dashboard for HRSA Staff to process. For government-managed relocations, HRSA staff notifies a travel & relocation coordinator to make arrangements for the participant. Once the relocation request is complete, any unused funds will no longer be available.

3.1.3.15 Tuition Invoices

BHW programs make tuition and fee payments directly to schools on behalf of students that are awarded BHW scholarships.

Purpose

Tuition invoice functionality assists HRSA staff with processing tuition invoices electronically. It also exports approved invoices to the Unified Financial Management System (UFMS) for processing direct deposit payments to schools.

User-Base

Tuition Invoice functionality is only available to internal HRSA staff that oversee NHSC and NURSE Corps Scholarship programs.

Module Description

Universities submit tuition and fee invoices to BHW's scholarship programs each semester or term. The submission occurs outside of the system. Once invoices are received, HRSA staff uploads them into the system for processing. During review, if any ineligible items are identified, the invoice total may be adjusted. Business rules are in place to ensure that an invoice has not already been paid and that the participant complies with program requirements. Once approved, the payment is placed in a Pending Submission to UFMS status until a HRSA staff member creates a payment file with one or more approved payments. The system then sends an email to PSC with a link to the payment file along with an attestation statement provided by Program. PSC sends an email back to Program to verify receipt and to confirm if the files were processed successfully. Upon successful completion, the tuition payment file is closed and the system updates the payment information.

3.1.4 Sites and Schools Module

The suite of functionality described in this section pertains to the management, oversight, and compliance activities of NHSC-approved sites and schools affiliated with our loan repayment and scholarship programs. A NHSC-approved site is a health care facility that generally provides comprehensive outpatient primary health care services to populations residing in HPSAs and has been determined to meet NHSC site eligibility requirements and qualifications. Schools are accredited institutions for the training of health care professionals.

Modules mostly pertain to processes applicable to sites. Participants must be assigned to work at approved sites in fulfillment of their service obligation. The system also maintains information for schools in which scholarship awardees attend. However, there is limited functionality related to schools. The modules described apply business rules and requirements driven by application program guidance.

3.1.4.1 Site Profile Management

A “site” is a specific location in which a BHW participant fulfills a service obligation required by a BHW program. Sites may belong to an organization, which may consist of one or more sites. An administrative Site Point of Contact (POC) who works at the site is responsible for engaging with the BHW regarding loan repayment participants employed at the site. A Site POC can be linked to one or more sites within the same organization.

Purpose

The site profile page displays all of the information within the system that applies to the site and allows HRSA staff to manage the site information, online applications, program support services, and compliance monitoring processes.

User-Base

Site profiles can only be accessed externally by site POC’s that have created a Site POC Portal account and have been attached to a site as a Site POC. HRSA staff have access to view site profiles, tasks, and service requests associated with the site profile. Access is controlled through user roles assigned to specific staff.

Module Description

The site profile page displays the following information:

- General Information - Site records contain information on the physical and mailing address of the site, as well as general site contact information. Additional identification information (e.g. CCN) can be included depending on the type of site.
- Points of Contact (POCs) - Site records contain information on points of contact for each BHW program supported by the site. The BMISS Platform includes contact information and roles for each POC at the site.
- Site Network - Sites may be part of a larger network or organization of sites. If a site is part of a network, the BMISS Platform captures this relationship by linking the site to a main/parent site for the network. When connected to a site network, the BMISS Platform displays information on all sites in the network.
- Services Provided – The BMISS Platform captures and displays the primary medical, behavioral health, and dental care services provided at the site. These services are used to determine eligibility for various BHW programs.
- Health Professional Shortage Areas (HPSAs) – The BMISS Platform supports both manual and automatic matching of HPSAs to a site based on the site’s location. Geolocation information is used, based on the site’s address as well as the services provided by the sites, to suggest which HPSAs should be matched to the site.
- Program Specific Details - For each BHW program in which the site participates, the BMISS Platform captures and displays information relevant to the site’s relationship to that program.

The primary information displayed includes the type of site as determined by program policy and the current program status for the program (e.g. active, inactive or terminated).

- Site Compliance - BHW analysts may use the BMISS Platform to indicate an issue or incident at a site by setting an issue/incident flag. When setting a flag, the analysts can indicate the date and details of the issue or incident.
- Job Opportunities – The BMISS Platform allows analysts and site POCs to manage open positions that display on the Health Workforce Connector. It also displays a roster of all awarded clinicians that currently work at that site.

3.1.4.2 Site Application and Recertifications

Purpose

The BMISS Platform allows the online submission of site applications for sites interested in employing BHW program participants. This functionality allows BHW analysts to manage site reporting, site visits, and job vacancy postings. BHW analysts use this functionality to review and approve NHSC site applications and monitor NHSC site performance.

User-Base

This module is used by Site POCs and BHW Analysts. POCs access the module via the POC portal and analysts access system functionality via the intranet user interface.

Module Description

The site application process allows sites that have never applied for NHSC site approval to submit an application during the application cycle and become a certified site with BHW if they meet all of the requirements. The re-certification application process allows sites that submitted applications in the past to re-apply so they can retain or become an active site. Both applications can be accessed through the Site POC portal and are made available based on review cycles. The system uses business rules developed based on program guidance to assess eligibility.

3.1.4.3 Site Visits

Purpose

BHW analysts use the site visit tool to plan and coordinate site visits to NHSC-approved sites. Site visits are conducted to ensure that the site is in compliance with the BHW program requirements. Analysts are able to schedule new site visits and view pending and completed site visits.

User-Base

This module is used by Site POCs and BHW Analysts. POCs access the module via the POC portal and analysts access system functionality via the intranet user interface.

Module Description

The site visit tool contains functionality for scheduling, completing, and reporting site visit results. The tool also contains a mapping interface for trip planning and a ranking system to determine site visits based on priority. Analysts are able to use the tool to capture responses to site visit interview questions and generate a summary report based on responses. The tool also facilitates communication with Site POCs regarding scheduling.

3.1.4.4 Inquiries

Purpose

Inquiry functionality allows Site Points of Contacts to communicate directly with HRSA staff. They are used to record and track any and all documentation that are not a part of other functionality within the system. Inquiries were designed to fulfill two separate business processes;

- 1) External Inquiries, a customer service process designed to document communication between sites and Program; and
- 2) Internal Inquiries, designed to track issues and workflows that had not yet been built into the system.

User-Base

This module is used by Site POCs and BHW Analysts. POCs access the module via the POC portal and analysts access system functionality via the intranet user interface.

Module Description

Inquiries are available to all site POC's in the "Ask a Question" page on the Site POC Portal. Site POC's have the option of uploading documents to an inquiry and can view responses and enter additional comments to a submitted inquiry by accessing it through the Recent Requests section. Inquiries are routed to specific BHW Division/Branches based on several factors including the program, status, and subject. BHW staff can open, close or reassign both types of inquiries, and they can initiate communication or reply to a site through an external inquiry. Open inquiries appear on the task dashboard and can be accessed or assigned to other BHW staff through the dashboard or through the inquiry itself.

3.1.4.5 School Profile Management

Purpose

The school profile page displays general school information, School Points of Contact (POCs), and Data Collection Worksheets associated with each school. The Data Collection Worksheet (DCW) is used to collect tuition and fee information from schools to estimate awards given to students that are awardees of BHW scholarship programs.

User-Base

School profiles can only be accessed internally by BHW analysts that have the School Support Analyst role. Data Collection Worksheet (DCW) functionality is used by two primary groups: external School Points of Contact and BHW analysts who review and approve the DCWs.

School Profile Module Description

The school profile page can be accessed from the school search page by searching on the name, school ID, state, degree year, or BHW program. The profile contains general school information such as address, school POCs, and various institutional identification numbers. BHW analysts have the ability to edit the information and add comments.

The Degree information page lists the discipline and degrees for each program by school year. Under each school year tab, Data Collection Worksheets (DCW) for that year can be viewed. Analysts also use this page to indicate if the School is accredited and approved for each discipline/degree. If a school is not accredited, an applicant will not be eligible to submit an application.

Data Collection Worksheet Module Description

The Data Collection Worksheet assists the scholarship program in determining an accurate estimate of how much funding program needs to reserve for an applicant if they are selected for award. The DCWs are unique to each program, discipline, and degree.

DCWs are collected for schools that participate in NHSC and NURSE Corps scholarship programs. On a yearly basis, School POCs are asked to submit a detailed financial breakdown of tuition and fees for specific disciplines and degrees. Each program determines the submission dates that the DCW will be available, and notifies POCs by email.

School POCs access the DCW through the School Representative portal. Their portal account has a list of schools that they are associated with. The school POC will select a school, and that will lead them to the schools DCW page that has all the discipline/degree DCWs listed under each scholarship program. The School POC will enter the tuition and fee information to each DCW for the upcoming school year. Depending on the program, subsequent school years information may be requested, or automatically calculated.

On the selected DCW, the school POC will enter detailed amounts under three sections: Tuition, School Incurred Fees, and Other Reasonable costs. The school POC also has the option to enter comments and to save to complete later. If a school POC does not create or complete a DCW, BHW analysts will follow the same steps to complete the information.

After the DCWs are submitted, a BHW analyst will review the tuition and fees submitted by the school POC against the current schedule of fees published by the school. If necessary, the analyst will update the estimated fees. After review, the analyst approves the DCW, which makes the data available to import into the Participant Award Worksheet (PAW) if the applicant is chosen for final review.

3.2 Health Workforce Connector (HWC)

HWC is a public facing job search website used by approved sites in the BMISS Platform and the general public. It functions as an online resource and recruitment tool that connects and engages anyone who is interested in improving the health of underserved communities. Sites can use the HWC to create a profile highlighting their site's mission, services provided, and benefits for employees. They can also post searchable job opportunities. The general public can use the HWC to search for sites and job opportunities that match specific programs. The HWC also allows users to create a profile, search for NHSC and NURSE Corps sites, find job opportunities, and make their profiles discoverable by sites seeking to fill job vacancies. The HWC manages 32,000 unique visitors every month and almost 5,500 open opportunities.

User-Base

The HWC is extended to two primary user groups: site points-of-contact (POCs) of approved NHSC or NURSE Corps Sites and job seekers. Site POCs utilize the Site POC portal (extranet) to post job opportunities and create site profiles. Job seekers utilize the HWC to create searchable profiles and search for jobs or sites. The HWC is an external website and is available to anyone. Specifically, the ability to search for sites and jobs is available to all public users. No login is required.

3.2.1 Health Workforce Connector Features

3.2.1.1 *User/Client Interface*

The Site POC Portal web application uses highly interactive interface developed using Angular 4. It utilizes a single page application (SPA) pattern along with responsive design techniques to support different devices such as mobile phones, desktop and tablets.

3.2.1.2 *Job Opportunity Creation*

Approved NHSC and NURSE Corps sites can use the Health Workforce Connector to create publically searchable job opportunities. All opportunities must be in a discipline eligible to apply for a BHW program managed within the BMISS Platform. Users can manage opportunities by viewing a history of all positions posted for the site. This includes the entire list of open positions that are currently being advertised by the site.

3.2.1.3 *Site Profile Creation*

Site POCs can use the HWC to create a profile highlighting their site's mission, services provided and benefits for employees. They can post searchable job opportunities. The site profile displays comprehensive information pertaining to the site such as specific site details, headlines & descriptions,

contact information, social media links, site images and more. The site profile information is also publically available to users who search for jobs and sites on the HWC.

3.2.1.4 User Profile Creation

Job seekers can create searchable profiles for the HWC. These profiles are only searchable by points of contact for approved NHSC and NURSE Corps sites. Most importantly, two things can now occur: 1) users (i.e. job seekers) can create a profile and publish it and 2) registered Site POCs can actively search for candidates. The creation of a user profile is not mandatory and users can still perform all current functionality without a profile. The only PII being collected is the profile picture, but this is not required. The registration and account management features allow users to manage how their profile information is displayed.

3.3 Shortage Designation Management System (SDMS)

BHW strengthens the health workforce by identifying geographic areas, specific populations, and facilities experiencing a shortage of medical professionals. BHW also measures the extent of the shortage as indicated by a numeric score that represents the relative need in the area. The higher the numeric score, the higher the need for health professionals.

BHW collaborates with State Partners to determine which of these geographic areas, population groups, or facilities qualify as Health Professional Shortage Areas (HPSAs), Medically Underserved Areas (MUAs), or Medically Underserved Populations (MUPs). HPSAs, MUAs, and MUPs are collectively known as shortage designations and are eligible to receive federal resources through various programs.

Shortage designations convey the need for additional health care professionals. The designation of shortage areas allows HRSA to prioritize and focus Federal funding on areas of highest need. HPSAs are designated by HRSA as having shortages of primary medical care, dental, or mental health providers, and may be geographic, population, or facility-based. MUAs/MUPs are designated by HRSA as areas or populations that have limited access to primary care services. HPSAs, MUAs, and MUPs are designated and managed via the Shortage Designation Management System (SDMS).

Purpose

SDMS is a single, unified web-based system for managing the overall application submission, review, scoring, approval, and processing of shortage designations.

User-Base

Federal and contracting staff access the system internally through an intranet environment. State Primary Care Offices (PCOs) access the environment through the PCO Portal.

3.3.1 Shortage Designation Management System Modules and Features

3.3.1.1 Data Sources

Analysis, scoring, and eligibility of shortage designations is dependent on data sourced externally from Federal, State, and private entities. Sourced data is communicated to the system via Extraction-Transformation-Loading (ETL) procedures. Data is sourced from the following:

- The Centers for Medicare & Medicaid Services
 - National Plan and Provider Enumeration System (NPPES)
- The Centers for Disease Control and Prevention
 - Mortality and Natality Files from 2012-2016
- The Census Bureau
 - Demographic and population data sourced from the U.S. Census American Community Survey (ACS) 2016 5-year estimate
- The Environment Systems Research Institute (ESRI)
 - Street network and speed limit data are used in all distance and time calculations for private travel
- State and Territory Primary Care Offices
 - Special population and age-sex adjusted population data, substance and alcohol abuse prevalence data, fluoridated water access data

3.3.1.2 Application Creation and Submission Module

The designation process for most HPSAs and MUA/Ps is initiated by State Partners. State Partners include State Primary Care Office (PCO) grantees of state departments of health, and other public or private entities a PCO has entered into a contractual agreement with, such as State Primary Care Associations. State Partners begin the application process by (1) updating health care providers via the Provider Management module; (2) selecting geographic areas for designation via the mapping interface; (3) reviewing system analysis and scoring information; and (4) submitting the application. All of the above application steps occur through the program portal for State PCOs.

Once a designation application is submitted through the portal, it is routed internally for HRSA review. If approved, the application status changes from an under review status to designated, is published on HRSA's Data Warehouse (<https://data.hrsa.gov>), and can be used by applicants applying to loan repayment and scholarship application programs.

3.3.1.3 Provider Management Module

The number of health care providers practicing in an area experiencing a shortage of health care professionals is part of the analysis and scoring process for designations. State partners are expected to

update service delivery information for providers before they initiate a shortage designation application. Partners can update provider data through the user interface or the Import Tool; both are accessed via the SDMS Provider Management module of the PCO Portal. Providers in the system are obtained from CMS' National Plan and Provider Enumeration System (NPPES). Providers are extracted via a public CMS file on a weekly basis and are processed through system ETL procedures. The ETL process captures new providers and tracks all changes to existing provider records. The provider management module also incorporates a notification feature to internal and external stakeholders regarding the review decision for submitted designations. Additional features of the Provider Management module are summarized below.

User Interface Features and Functionality:

- Database searches for usable providers using a range of search filters
- Status engine to reflect provider eligibility
- Search results shown via a customizable grid that can accommodate record updates
- Business rules that facilitate data integrity and Full Time Employee (FTE) calculations
- History of user changes and system updates
- Geocoding service leveraged through HRSA Data Warehouse's (HDW's) geocoding Application Programming Interface (API)

Import Tool Features and Functionality:

- Update of provider data in bulk via a downloadable Excel file. Changes are made directly to the Excel file and uploaded back to the system. The system evaluates contents of the file against validation rules before accepting the data.
- Report of accepted and rejected records

3.3.1.4 Mapping Tool Module

State Partners initiate a designation application from the SDMS mapping module in the PCO portal. This module is used for geographic or population HPSA or MUA/P applications. The mapping module uses ESRI's ArcGIS software to render spatial information to users via a central server application through a web browser interface. Spatial data such as states, counties, census tracts, minor civil divisions, cities, roads, and interstates are shown via the mapping interface. The user must use one of the geographic layers and mapping selection tools to select an area under consideration for a designation. After selection, the mapping module guides the user through several designation analysis steps. These analysis steps determine eligibility and scoring. Application submission is the last step of the application. Additional features of the mapping application are summarized below.

User Interface Features and Functionality:

- Exposure of population, socio-economic, demographic, and provider data via selectable layers

- Support for over 50 different types of designation applications, each with their own eligibility and scoring business rules
- Ability to add population data not sourced by the ACS
- Business rules that facilitate data integrity and FTE calculations
- Determination of population centers
- Generation of travel boundaries based on road data from ESRI; street network and speed limit data are used in all distance and time calculations for private travel.
- Contiguous area analysis
- Supporting document upload
- Data summary panel
- System calculated population totals across geographic components
- Ability to update existing designations and withdraw current designations

3.3.1.5 Facility Application Module

Site HPSA applications can be submitted for the designation of a single health facility, whereas area HPSA applications are specific to a geographic area or population within a given area. Site HPSAs fall within scope of two types of designations: Auto-HPSAs and Facility HPSAs. Auto-HPSAs are evaluated and scored via a manual process that occurs outside of the system. Evaluation and scoring is completed by Shortage Designation Analysts. Once an application is scored and a designation decision has been made, results are entered into SDMS via a data entry screen. The designations are then searchable via the database and published in HRSA's Data Warehouse. There is a separate module for facility applications in SDMS. State PCOs initiate the application process for facility HPSAs. The module applies a suite of business rules to determine eligibility and scoring. Once an application proceeds through all of the application steps, a PCO can submit the application for consideration. It then becomes available for review through the Application Review module.

3.3.1.6 Application Review Module

Once a designation application is submitted, it is made available for review by BHW Analysts in the Shortage Designation Branch. The applications are accessible via the intranet user interface of SDMS. Applications are managed through a task dashboard. Once an application is selected for review, it is subject to a three-stage review process: (1) primary review; (2) secondary review; and (3) final review. Each review step receives a status of approved or disapproved, which dictates the direction of the workflow. Once a designation receives final approval, it is picked up by HDW's ETL process and published via the Data Warehouse. Users can also use the system to search for designations. The system also hosts on-demand reports and incorporates a notification feature to external stakeholders regarding the review decision for submitted applications.

3.3.1.7 National Shortage Designation Update (NSDU) Analysis Tool

The National Shortage Designation Update (NSDU) fully automates the process for updating designations. Most existing designation types require review and updating on an annual review cycle determined by BHW. The standard process for updating an application follows many of the same workflow steps defined in the previous sections. The NSDU replicates these steps into a package of business rules that assess an existing designation for eligibility and scoring. Doing so removes the dependency on State Partners and allows BHW analysts to initiate system driven application updates, significantly reducing the application submission and review period and providing BHW analysts with up to date designation information. NSDU functionality was used to update qualifying designations in 2017. The functionality is available to use when there is a need to launch another round of updates. NSDU functionality will require compatibility updates prior to the next instance of its usage.

3.3.1.8 Auto-HPSA Impact Analysis Tool

BHW analysts review and score Auto-HPSA designation applications via a manual process that occurs outside of SDMS. Once scoring is complete, analysts enter scoring information via a data entry form in SDMS. As of the writing of this document, BHW is developing a process to perform a one-time update of existing Auto-HPSA designations. The update process will model the NSDU process explained above.

Tasks and activities include:

- Creating a back-end process to add/update/delete organizations and sites
- Creating a portal to allow points-of-contact to login and access Auto-HPSA functionality
- Implementation of user management functionality
- Modifying existing database views or creating new database views to publish Auto-HPSA designations to HDW

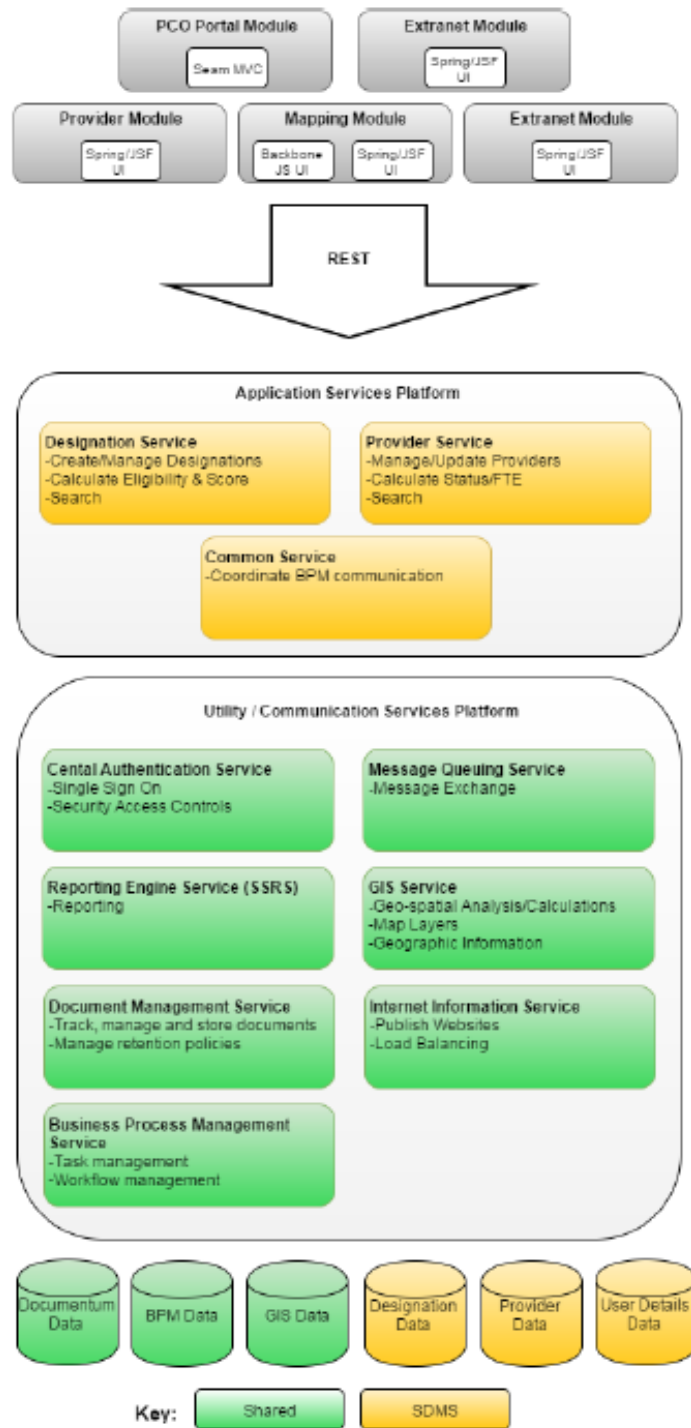


Figure 4 SDMS Architecture Overview

4 Initiatives and Additional Platform Functionality

4.1 Location Management Initiative

The Location Management Initiative (LMI) is the first major phase of a larger initiative to modernize the BMISS Platform's technology, interfaces, and processes. It focuses on expanding and improving the platform's capability to store and manage health facility sites and school information for the loan repayment and scholarship programs. This initiative involves several phases of development, and is currently in the requirements phase.

Location Management has the following goals:

- Decouple program specific data requirements from core location data in order to support program flexibility and future BHW priorities
- Expand the types of locations in the system
- Enable better coordination and integration with data in other systems
- Create new functionalities that utilize the new data model and provides better business intelligence
- Redesign the portal and improve the customer user experience

User-Base

The Location Management functionality is limited to only internal HRSA employees that manage medical facilities and schools for the loan repayment and scholarship programs.

Scope

Location Centralization

- Creation of Universal Location Record & Centralized Location Repository
- Manage Location Data Changes & Ensure Location Data Accuracy
- Consolidate and Reduce Duplicate Locations
- Increase Flexibility of Location Search Functionality
- Standardize Location Data Elements and Nomenclatures
- Increase Efficiency of the Location Record View
- Increase Data Collected for Schools
- Add Ability to Upload Documents to Location Records
- Improve grouping of locations into organization networks

Location Creation

- Expand Application Processes (e.g. NURSE Corps Application)
- Improve Duplicate Location Checking on Applications

- Improve Processes for Creating Schools

Monitoring and Compliance

- Expand Visit Types and Include NURSE Corps Locations
- Display Alerts for Location Compliance Issues
- Increase Clarity of Location Statuses for NHSC and NURSE Corps
- Improve Location Compliance Reporting
- Improve Site Visit Processes

Points of Contact Management

- Improve Messaging and Notifications to Location POCs
- Improve Identification and Activation of Location POCs
- Increase Capability to Manage POCs for BHW Analysts
- Increase Information in History of POC Interactions
- Integrate School POCs into Site/Location POC Model

4.2 Data Management Initiative

The Data Management Initiative focuses on ongoing stewardship of BHW data. This includes supporting operational activities and business decisions through various data analysis methods, approaches, and systems. A goal of the initiative is to provide BHW Analysts efficient access to data reporting from across the BMISS Platform without compromising source systems. The initiative addresses BHW data needs through Business Intelligence integration, improved data integrity, and quality. Tasks include:

1. Producing health care workforce research and projection reports;
2. Analyzing the current state of the data initiative and validating the direction and objectives;
3. Providing the data necessary to respond to time sensitive data inquiries from Congress, Stakeholders, and FOIA requests; and
4. Ensuring that BHW data is accessible, accurate, actionable, safe, and secure.

Reporting capabilities use analytical Tools (Tableau Dashboards, Microsoft SQL Server Reporting Services (SSRS), GIS Portal, and models) to pull critical data elements from multiple sources to provide insight into BHW programs and access to actionable data.

Data Marts

Data Marts are being created to consolidate data from the BMISS Platform (and in the future, from other BHW data sources) for reporting and analytics purposes. Using a Star Schema Design, Fact (holding Measures related to business processes) and Dimensions (providing Context to the Measures in the Fact tables) tables for subject areas give users the ability to generate reports. Target tables are populated via Extract, Transfer and Load (ETL) packages implemented in SQL Server Integration Services (SSIS). Approved users with access can query reporting database target tables to write queries on participant

data via SQL Server Management Studio. A data dictionary outlining data elements used in the dashboards and reports developed under this initiative will be maintained. The data dictionary contains definition, source, dependencies, etc. for each data element in order for users to understand how to use the data elements in dashboards or reports.

The initial Data Mart creation component of the initiative was completed in May 2018.

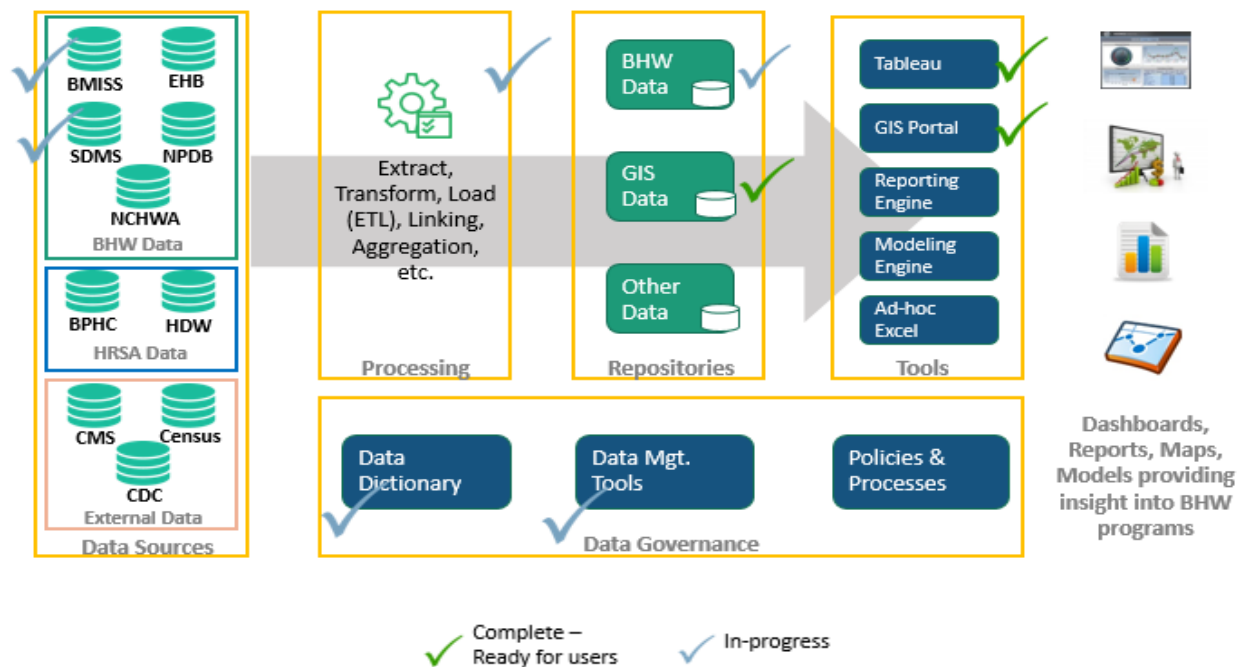


Figure 6 Data Mart Design

Tableau Dashboards

Interactive dashboards and reports using Tableau software/server embedded in browsers or other delivery methods allow visualization of transactions system data, Health Workforce Connector data and data in the BMISS data marts for user consumption and ad hoc analysis. Select users with Tableau Desktop software can create their own dashboards incorporating self-made data sets and/or external data sets (from HRSA Data Warehouse, Census, CMS, etc.).

Examples of current Tableau Dashboards include:

- Application Cycle Data Dashboard – Insight into application cycle monitoring.
- Field Strength Explorer – Annual accounting of participants in service to show clinician impact.
- Clinician Tracker – Captures the trajectory of clinicians from end of service obligation.
- Health Workforce Connector – Identifies site usage and job posting statistics.

Tableau Dashboards allow users opportunities to visualize BHW data by demonstrating the impact of BHW programs and supporting business decisions through various data analysis methods and

approaches. This includes assisting in activities involving program planning, monitoring and evaluation, and producing health care workforce research and projection reports. They aid in the goal of improving the ability to define, integrate, and effectively retrieve data for internal management and external communication purposes.

Microsoft SQL Server Reporting Services (SSRS)

The BMISS Platform uses SQL Server Reporting Services for structured reports using transactions system data, Health Workforce Connector data and data in the BMISS data marts. There are approximately 156 canned reports currently available. Each report has one or more stored procedures that are maintained individually and generally not shared across reports. They cover the following areas:

- Applicants
- Financials
- Participants
- Schools
- Sites & Vacancies

Geographical Information System (GIS) Portal

The GIS portal is a tool available to load custom map data for analysis projects not well supported by Tableau dashboards or spreadsheets. The portal was developed using ESRI's Geographic Information System (GIS) software.

Other Reporting/Analytics

- **BHW Business Intelligence Server:** Sandbox server used to stage data for reporting in Tableau and ad hoc reports.
- **Ad Hoc Reports (Excel):** Creation and delivery of custom reports.
- **Documentum/D2:** Annual and ad hoc reports (SQL and output) are tracked in Documentum by fiscal year or request date.

4.3 BMISS-SDMS Integration Functionality

BMISS-SDMS Integration (BSI) functionality comprises a host of services within the BMISS Platform that facilitates interoperability between the BMISS Platform and the Shortage Designation Management System (SDMS). The functionality makes it possible to match locations that contain a physical address in BMISS to geographic and facility Health Professional Shortage Areas (HPSAs) maintained in SDMS. BSI functionality utilizes geocoding, geospatial, and unique ID analysis to match locations to health professional shortage areas.

User-Base

BSI functionality is extended to two primary user groups: external site points-of-contact seeking NHSC approval and internal HRSA employees that manage the review process. Site POC's access the system via the BHW Program Portal; see that section for details regarding access and architecture.

4.3.1 BSI Services

4.3.1.1 Geocoding Service

Locations in the BMISS Platform are geocoding in order to perform geospatial analysis. Geocoding calls are made through an intermediary service on the BMISS Platform that uses HRSA's Data Warehouse API for geocoding. The API facilitates address standardization, geocoding, and target analysis. Target analysis can be performed to determine if a location/address falls inside or outside features of the selected target. Targets are a collection of HRSA's spatial data and selected civil boundaries.

4.3.1.2 Site-HPSA Matching Service

The purpose of this service is to find, evaluate, and process HPSAs that geographically match a BMISS Platform location. The service functions bilaterally, matching HPSAs to a location in the BMISS Platform and matching a location to HPSAs from SDMS. To perform matching, a location API is invoked to:

- Validate the request to ensure either Lat/Long or ID/Type pair is present;
- Invoke SDMS Geo Area Designation Matching Service if Lat/Long exists;
- Invoke SDMS Get Designations By Identifier if identifier ID/Type exists; and
- Apply matching logic business rules.

4.3.1.3 Geo Area Designation Matching Service

This service will take in Lat/Long and return encompassing area designations for a given location. Given a geographic point in the (Lat/Long) format, the input data is first converted into a point feature, and then a spatial intersection operation will be queried using the point feature on each designation data set, and once an intersected component is found, its designation public ID, status, discipline, and type will be returned.

4.4 Person Search Functionality

The BMISS Platform stores a variety of data in different formats and locations. Person Search functionality improves the user search experience by enabling internal staff to search across all person records in the BMISS Platform with ease and efficiency. This decreases the amount of time it takes to find an unknown person's record, allows users to search more broadly, and provides users a more comprehensive view of all records (participant, applicant, POC) belonging to a single person.

Key Features

- A Global BMISS Person Search page.
- Enhanced search pages to improve user experience and increase search capabilities.
- Enhanced Task Dashboard user interface to facilitate navigation and management of Tasks.
- A BMISS user Person Search role assigned to all users.

4.5 User Management and Super Admin Functionality

The BMISS Platform is a role-based system that includes user management screens that allow specific analysts to grant access to new users and assign and remove roles for existing users. The role structure within the BMISS Platform is very complex with around 500+ active roles. There are few general roles, most are page and task specific. The user management and role structure will likely be redesigned as part of the ongoing BMISS Platform modernization effort. The modernization focus for user management will streamline the process of granting roles and permissions and facilitate user audits.

Super Admin is a restricted role-based function that allows specific analysts to edit, add, and delete site assignment and in service verification information outside of normal system processes. This tool is used for data cleanup work. A future goal for the BMISS Platform is to replace Super Admin capabilities with role-based functions built into tasks and processes directly.

4.6 Task Dashboard Functionality

All electronic application, obligation, site, and participant service process tasks can be assigned and accessed through a central task dashboard. The task dashboard is role based. There are two base views - one where analysts can only view tasks for which they have a role and one where analysts can view all tasks in the system.

The task dashboard contains a text search to search within the description of tasks. It also contains several filter options including process type, task owner, created and modified dates, new only, custom labels, etc. Analysts can use these options to create and save custom filtered views of their task dashboard. Analysts can also create custom labels and set custom priorities for tasks.

The task dashboard can be used to take ownership of tasks directly or to assign them to other analysts. Tasks can only be run by, and assigned to, analysts that have the correct roles to run the task.