DSD - Section 10-13

D-4.2-03 – IHSS CMIPS Detailed System Design (DSD) (R2025.03.01) Section 10-13

Version 1.0

03/28/2025

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DSD 10/Architecture – Timesheet Architecture

DSD 10/Architecture – Timesheet Architecture/TPF Automated Timesheet Entry Architecture

CI	Document Name
CI-117905 - DSD BF TPF Automated Timesheet Entry Architecture IMPLEMENTED	DSD_BF_TPF_Automated_Timesheet_Entry_Architecture.doc

The paper timesheet processing solution is a single statewide solution where timesheet processing occurs at a Timesheet Processing Facility (TPF). TPF is the legacy term that originated with paper timesheet processing and the architecture and scope of services have been scaled to include scanning and processing of additional types of forms. The solution includes support for County staff to manually correct a specific timesheet working through the IBM Cúram Case Management application. The TPF connects to the rest of the CMIPS environment located at the California Department of Technology (CDT) Data Center at Gold Camp using the secure State Wide Area Network (WAN).

Processing timesheets in this manner maximizes the State's cost savings. The TPF provides extensive and robust scanning and processing services of TPF form types.

The TPF software is hosted on Windows servers, using Storage Area Network (SAN) architecture in a high-availability configuration. The TPF data and image capture solution runs on SQL Server 2016.

Capture is the process of digitizing paper forms to extract data, store data and images, and distribute images as online content to authorized users performing business tasks. This section documents the capture business process for the TPF to automate the processing of TPF forms. TPF is used to reference processing of the following State of California (SOC) TPF form types:

- SOC 2261: Timesheets;
- SOC 2261L: Large Font Timesheets;
- SOC 2275: Travel Claims and
- SOC 2302: Sick Leave Claims.

An additional TPF form type will be digitized according to the existing TPF business processes:

- SOC 2261EVV: EVV Exception Timesheets.

To process TPF forms mailed from Providers, TPF couriers pick-up mail from the West Sacramento Post Office. The EVV Exception Timesheet forms will be received in the existing TPF timesheets Post Office Box (POB). For example, timesheets are received in a different POB than Sick Leave Claims. An estimated volume of mail received that day by POB (i.e., document type) is emailed to a specified email distribution list to provide an estimated number of work items to be processed. Timesheet processing services are performed in a secured room, staffed by authorized personnel who have a business need to access the data to fulfill their daily job responsibilities.

The high-level steps in the capture process follow:

- Document Intake (Mail Pick-up).
- Document preparation of incoming mail.
- Scanning of forms received by mail.
- Verification: Image verification of scanned forms and data verification of extracted data from forms.
- Quality Assurance.
- Publish Content: Images and metadata from scanned forms (Storage).
- Reporting on productivity.
- Ongoing System Maintenance and Administration of the TPF Capture Solution.

The figure below depicts the activities of the overall TPF capture process. This process flow shows how CGI will incorporate an additional form type into the TPF services and functions.

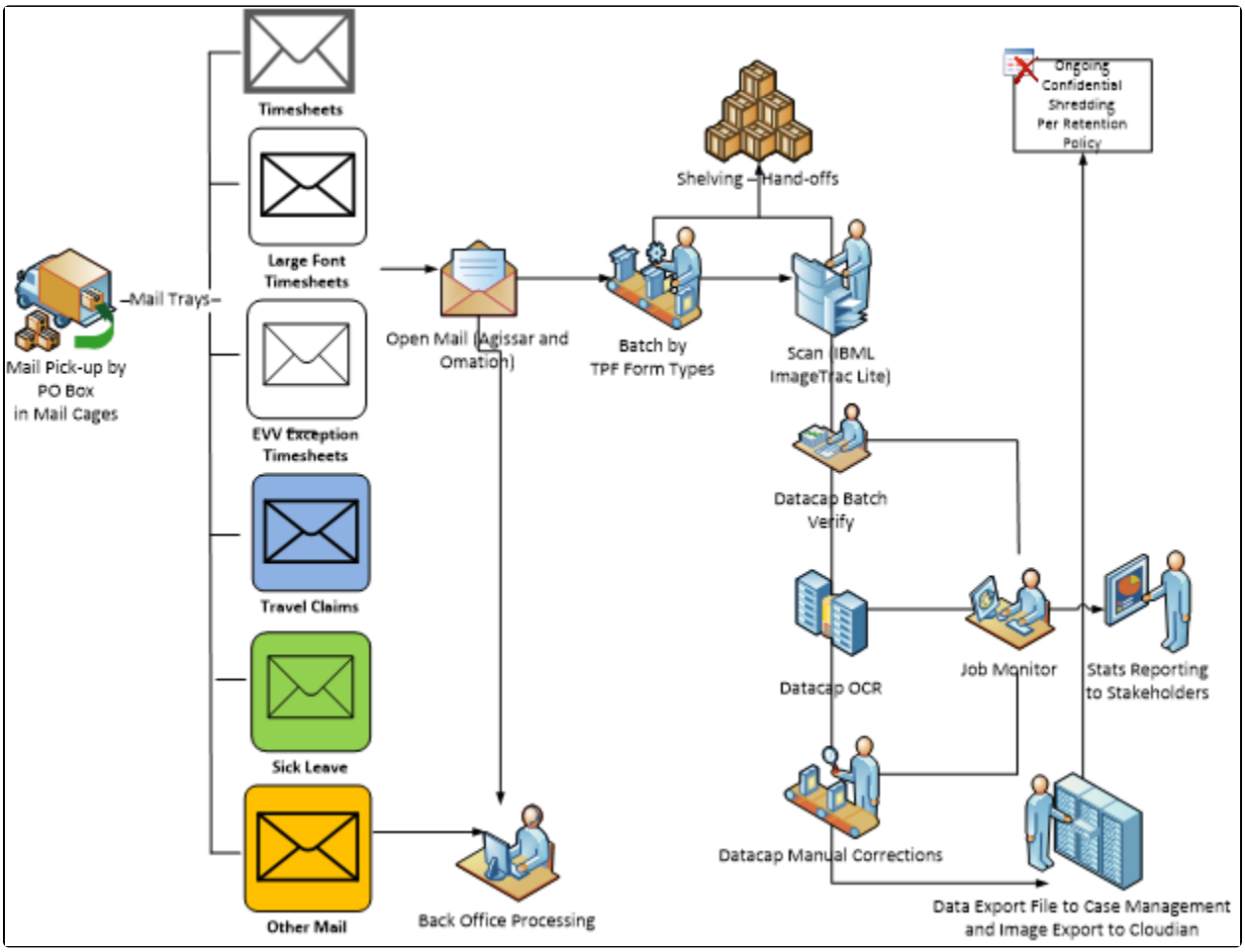


Figure – TPF Timesheet Processing Diagram

The primary components of the TPF Automated Timesheet Processing architecture system will not change as a result of adding this new EVV Exception Timesheet form type. The processing of paper timesheets, paper travel claim forms and paper paid sick leave claim forms at the TPF has a gigabyte connection along the path between servers. The components of the capture solution are:

- Image Repository for access and retention per the records management policies.
- SQL Database.
- Image Processing and
- Optical Character Recognition (OCR)/ Intelligent Character Recognition (ICR) completion.

The existing TPF capture solution will continue to be used:

- Agissar provided paper jogger for use prior to the ACE or Omation letter opener machines, as necessary for non-standard envelopes.
- Agissar Automatic Contents Extraction (ACE) automated envelope opener and document extractor, with a paper jogger on the end of the machine for extracted forms.
- Omation letter opener that mills the top side of an envelope.
- IBML ImageTrac Lite high-speed, high-volume scanner/imprinter.
- IBM Datacap capture application for forms scanning and ICR/OCR engine.
- Cloudian image repository for content storage.

The scanned images will be available to authorized users through Cúram case management application after TPF processing.

Note: The use of the ACE machines covers the functionality of paper jogging of extracted forms prior to the scanning step.

Paper Jogger (PN 9400)

The paper jogger (PN 9400) has six (6) pockets with altered pitch that persuades contents to the bottom of the envelope, for the purpose of not cutting the contents during use of an automated letter opener machine. The paper jogger comes with the following equipment customizations:

- Acoustic Cover (PN 9398) to reduce noise from 85 dB to 78 dB.
- Time Light and Alert Kit for Jogger (PN 9258-1) that allows a user to set a jog for a predetermined amount of time (e.g., 2 minutes) and when finished, a light comes on to alert the operator that jogging is complete.

Omation 206 Letter Opener

The Omation 206 letter opener feeds envelopes through the machine for the purpose of not milling open the top side of the envelope so that TPF Agents can then pull out the envelope contents.

Agissar Automatic Contents Extraction (ACE) Machines

- The Agissar Triple Cut C5 ACE (model 6.5) unit is a cost-effective, automatic envelope opener and contents extractor.
- Each ACE unit can automatically extract approximately 3,000 – 4,000 timesheets per functional hour.
- The Agissar ACE ensures that the timesheet and the travel claim form are extracted from their respective envelopes and that the envelope is empty before disposal.
- The ACE trio is configured to allow a single operator to load envelopes, offload stacked timesheets, offload stacked travel claim forms, and empty the discarded envelope bins.

Agissar ACE includes a data collection system that monitors and tracks usage by productive run time, operator-related maintenance, break time, downtime, and job-related task time.

Note: Envelope thickness that indicates more than a single sheet of paper contained within is diverted in the business process workflow and opened manually, not automatically.

IBML Scanner/Imprinter

The IBML solution components are:

- **IBML ImageTrac Lite scanner:**
  - The capacity for each IBML scanner is 200 - 500 pages per minute, depending on factors, such as network speed and dpi.
  - Feeder capacity of 600+ documents with continuous feed ability and a high tolerance for creased documents, staples, and paper clips using effective doubles detection technology.
  - Images are scanned at **300 dpi.**
- **IBML Database/File Server:**
  - IBML SQL Server database. The IBML database that stores scan information.
  - Hosts the IBML scanned batches
- **IBML PostScan Server:**
  - Runs post processing scan tasks such as auto rotate and the creation of color PDFs for export.

The CGI TPF scales up to two (2) IBML scanners to accommodate peak processing periods.

The following are notional screen examples of scanning using the IBML scanners:

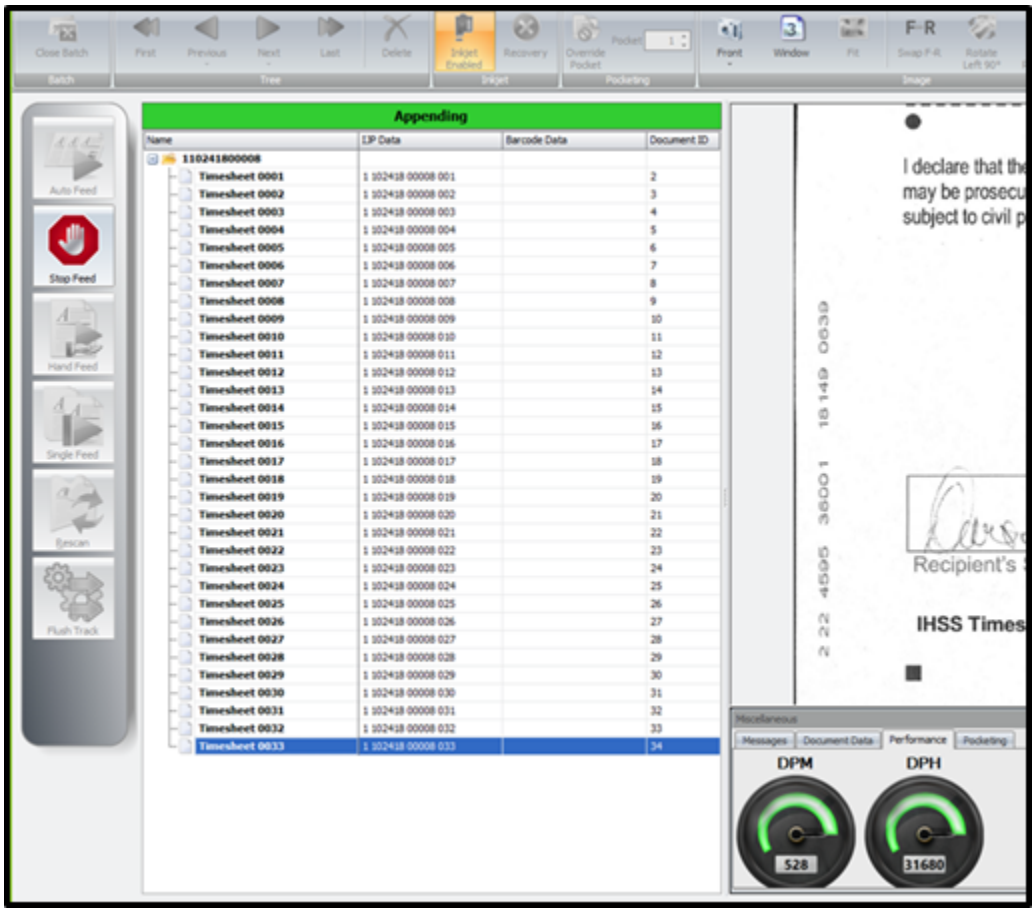


Figure – TPF Timesheet Processing – Scanning Images

IBM Datacap 9

IBM Datacap capture forms processing application is used to perform the following functions automatically:

- Import of images from the scanners
  - Includes Mail Receipt Date by Batch
- Image processing/clean-up
- Forms alignment
- Barcode reading (Timesheets and Travel Claims only. The Sick Leave Claim (SOC 2302) does not include a barcode)
- OCR/ICR data capture
- Verify
- Job Monitor
- Reporting
- Creation of export file for data
- Creation of export of scanned images TPF forms (i.e., SOC 2261, 2261L, 2275 and 2302) data validation

The Datacap Verify user interface shows the scanned form image and the interpreted form data on the same screen. The highlight indicates a handwritten field that has a character that did not meet the minimum confidence threshold. The questionable character is highlighted in the scanned form section and the interpreted form data section of the screen.

The form fields that do not meet the minimum confidence threshold are identified, and the form is routed to the semi-automatic OCR completion process. The corrections are presented in worklists of corrections that need to be made to:

- Barcode Index (Excluding SOC 2302 TPF form type)
- Timesheet Index (SOC 2261, 2261L and 2275 TPF form types only)
- Signature Index (all TPF form types)

The following are notional data entry screen examples of each type of correction:

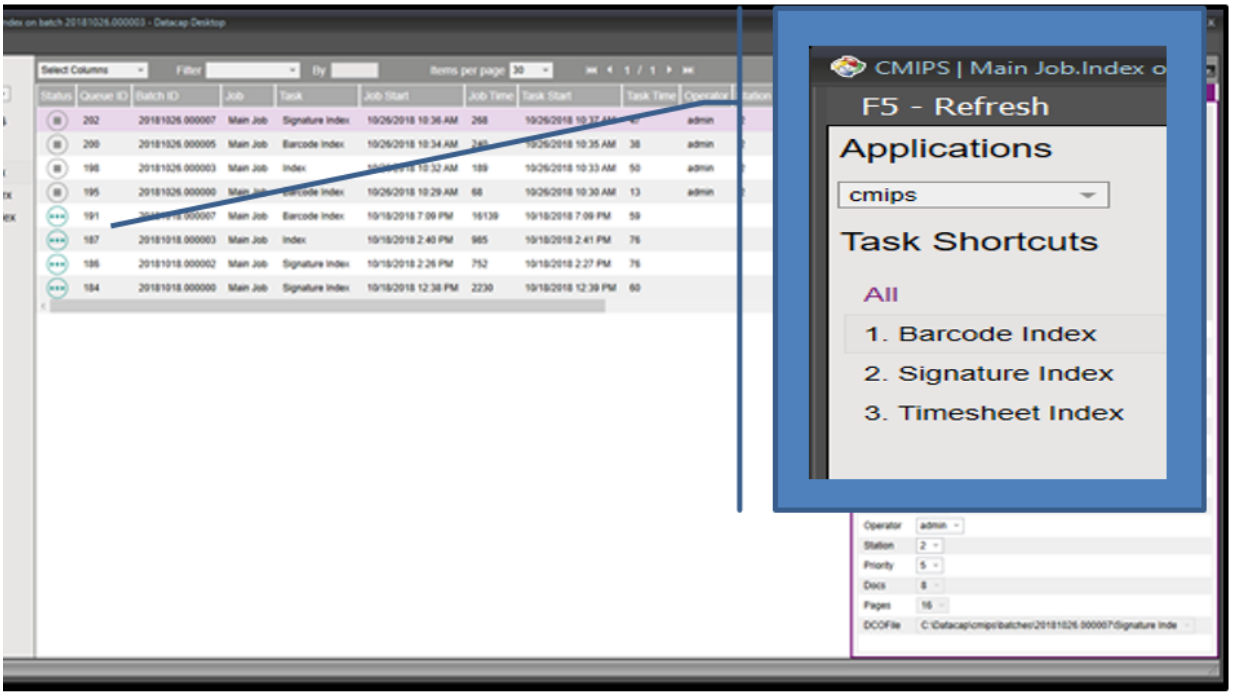


Figure – TPF Timesheet Processing – Correction OCR Data Functions

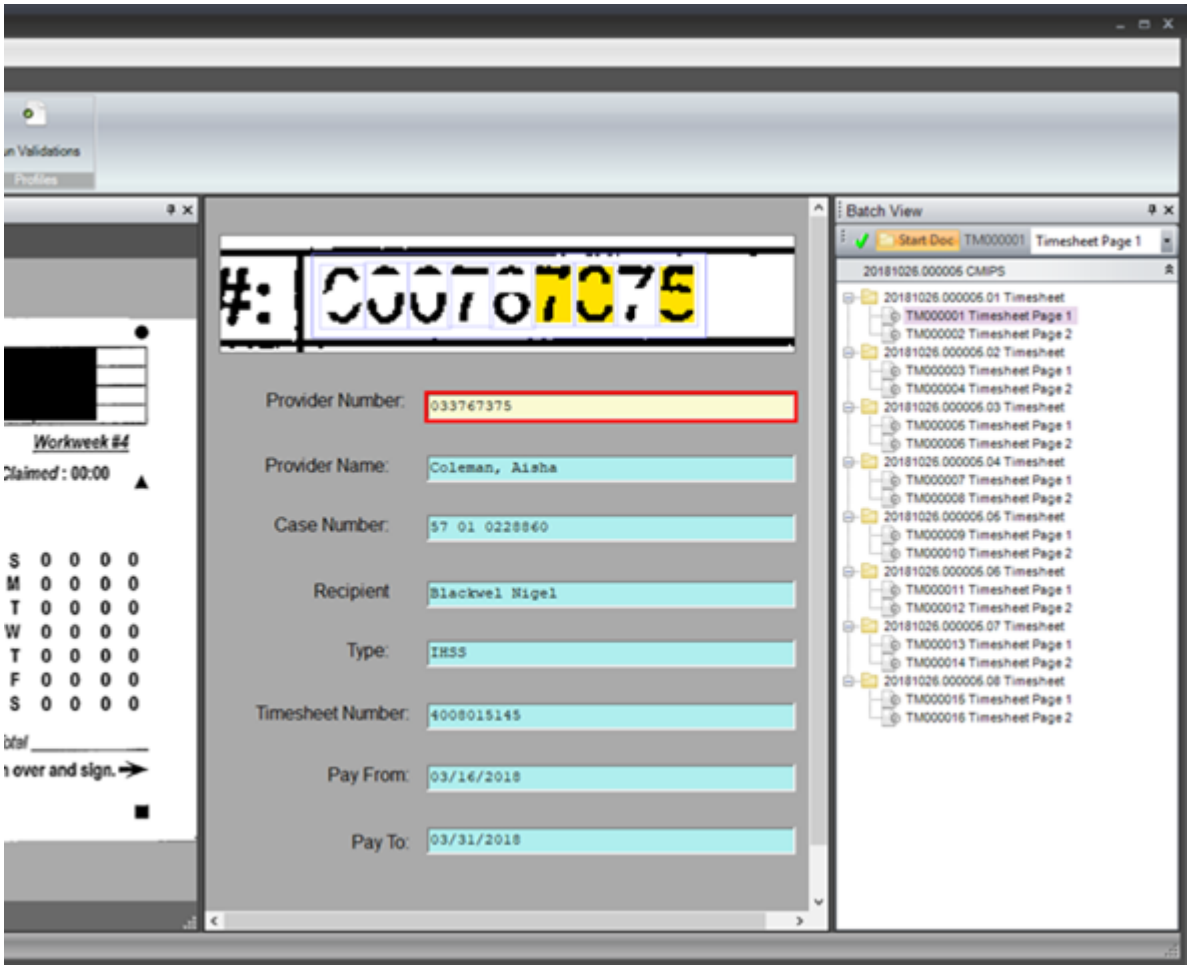


Figure – TPF Timesheet Processing – Correction of Barcoded Demographics and Data

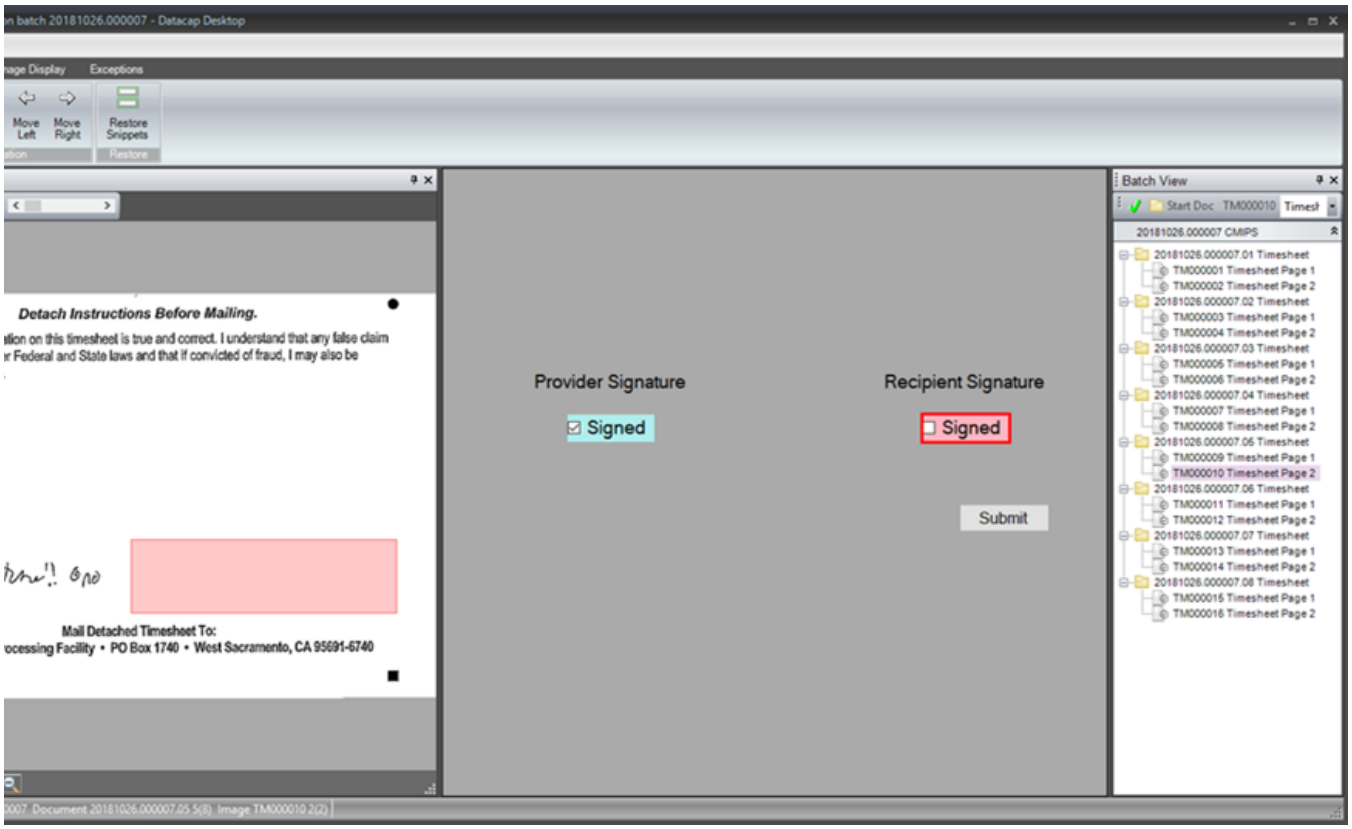


Figure – TPF Timesheet Processing – Correction of Signature Exception: Presence or Absence

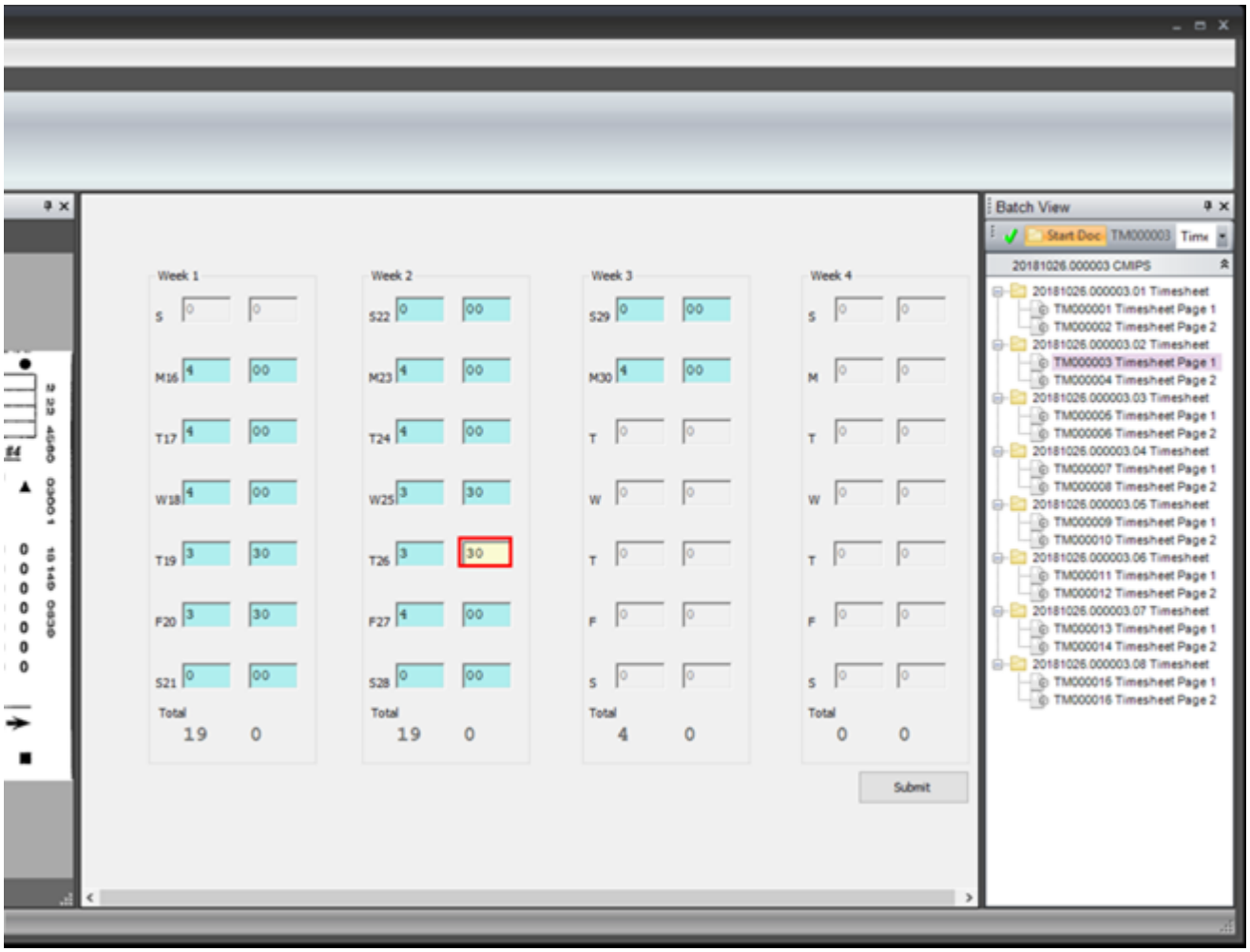


Figure – TPF Timesheet Processing – Correction of Timesheet (HH:MM) Data

The IBM Datacap solution components are:

- **IBM Datacap Taskmaster Server:**
  - The Taskmaster Server component provides the core functions of the Datacap system. It manages and serves batches to workstations and users. It also orchestrates the tasks according to the workflow of the Datacap application. It provides user authentication and access control, assigns batch IDs, controls batch queuing, and controls access to the Taskmaster databases. All communications between the Taskmaster Server and its clients, or the other core Taskmaster Server components, use the Datacap Taskmaster socket protocol. For communicating with the databases, it uses Microsoft Object Linking and Embedding for Database (OLE DB). It also uses the Common Internet File System (CIFS) interface to mount the file share that is required to access batches. Taskmaster Server supports a variety of authentication systems to control user authentication.
  - **SQL Server database**
    - **Taskmaster Admin:** The Administrator database stores information about users, groups, workstations, auditing, functional security, and application configuration. It also stores workflow configurations.
    - **Taskmaster Engine:** The Engine database stores information about batches, statistics, and queue states.
    - **Taskmaster Fingerprint:** The Fingerprints database manages the pointers to the fingerprints that are used in a given application.
      - The fingerprints are specific to the form type (i.e., SOC 2261, 2261L, 2275 and 2302)
  - **Hosts the Datacap batches**
- **IBM Rulerunner Server:**
  - Datacap Rulerunner Service runs as a Windows service and runs background batch processing tasks that do not require operator interaction, such as recognition and export.

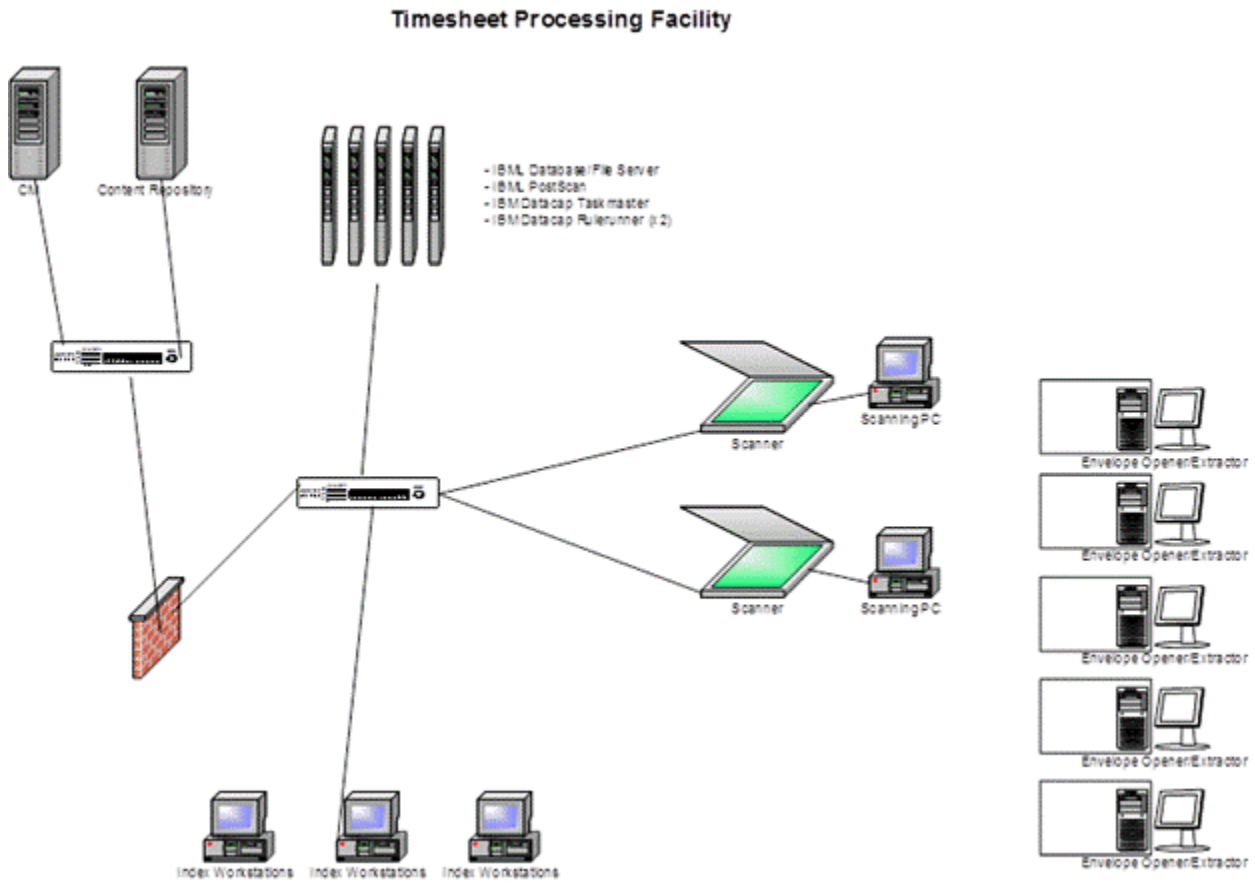


Figure – TPF System Architecture Interaction

DSD 10/Architecture – Timesheet Architecture/TPF Business Functional Specifications

CI	Document Name
CI-121506 - DSD BF TPF Business Functional Specifications IMPLEMENTED	DSD_BF_TPF_Business_Functional_Specifications.doc

At the central TPF, the Timesheet Processing Service (TPS) extracts paper from the envelopes and begins processing. Initial processing includes scanning of the forms and applying a time and date stamp (imprint) to each form.

Form Type	SOC Form #	Document Simplex/ Duplex	Number of Pages to Scan per Document
Timesheets	SOC 2261	1 page – duplex	2 (front and back pages)
Advanced Pay Reconciling Timesheets	SOC 2261	1 page – duplex	2 (front and back pages)
ADA/BVI Timesheets (Large Font)	SOC 2261L	1 page – duplex	2 (front and back pages)
Travel Claim Form	SOC 2275	1 page – duplex	2 (front and back pages)
Paid Sick Leave Claim Form	SOC 2302	1 page – duplex	1 (second page)

The Timesheet Processing Facility (TPF) Document Processing Specialists follows the TPF Capture workflow process for all scanned forms listed in the table above. The central TPF and Back Office clerks pick-up mail from the West Sacramento post office and process the documents mailed from Providers. The preprinted forms have different PO Boxes for the intent of aiding with sorting specific document types into batches. One or two early morning mail runs are performed, and the mail cages are brought to the TPF facility. An estimated volume of mail received that day by PO Box is emailed to a specified email distribution list to provide an estimated number of work items to be processed (i.e., document type, such as Timesheets, Travel Claim Forms, and Paid Sick Leave Claim Forms).

Staff use a letter opening machine to open and extract the one page double-sided forms from the envelopes and sort the pages into batches by type, such as Timesheets, Travel Claim Forms, Paid Sick Leave Claim Forms and all other types of inbound Back Office forms.

Note: Any documents and objects received in the mail along with TPF forms are mailed back to the Providers by Back Office staff, working at the TPF multi-function facility.

Staff performs data entry from some of the Back Office forms directly into the IBM Cúram case management system. Timesheets, Travel Claim Forms, and Paid Sick Leave Claim Forms are scanned using an ImageTrac Lite IBML scanner. The images of the data are exported to IBM Datacap software for OCR /ICR so that the data can be exported into the IBM Cúram Case Management application. The standard timesheet forms are received with instructions printed in four (4) different languages (i.e., English, Spanish, Armenian, and Chinese). However, the Provider information that is preprinted on the form is contained in the single barcode. The other values are numeric and can be OCR'ed independent of the language. The form instructions are printed. Values that cannot be OCR'ed with confidence are routed for manual data correction by the TPF staff using the Indexing module.

The export file containing OCR'ed data, derived and system populated fields, is sent to the IBM Cúram case management application, and reconciliation is confirmed between the destination and sending systems. From within the case management system, business logic is applied to route exception cases to work queues, and data is exported to Advantage.

Timesheets flagged with exceptions are worked through by the staff in the local County offices working directly with the impacted Providers. County staff can retrieve the timesheet image from the case management system to talk through any deficiencies or other questions.

Travel Claims and Paid Sick Leave Claim forms flagged with exceptions are reviewed by Back Office staff for resolution based on set procedures. Rejected travel claim or sick claim data is passed to local County or CDSS staff by Back Office following procedures that are outside of the CMIPS system.

The service level agreement for CGI TPF to hand-off all scanned data and images to IBM Cúram is within three (3) State business days of receipt in the mail.

After the successful distribution of scanned images and data to the image repository and IBM Cúram, the paper batches are confidentially shredded. Scanned images of the forms are retained permanently in the Image Repository.

Capture productivity daily statistics is provided as well as the monthly service level volume report through the portal.

DSD 10/Architecture – Timesheet Architecture/TPF Business Functional Specifications/Electronic Timesheet Entry Architecture

CI	Document Name
CI-753307 - DSD BF Electronic Timesheet Entry Architecture IMPLEMENTED	DSD_BF_Electronic_Timesheet_Entry_Architecture.docx

The electronic timesheet entry solution will be a single statewide solution where timesheet entry is completed by a Provider on a web based mobile application. Provider and Recipient signatures for the timesheet will be captured electronically as will the entry of service hours. The Electronic Timesheet solution is a cloud based customized product that will communicate with CMIPS as an external interface through Business Process Manager (BPM). The interface will include Event/Response activity as well as batch activity.

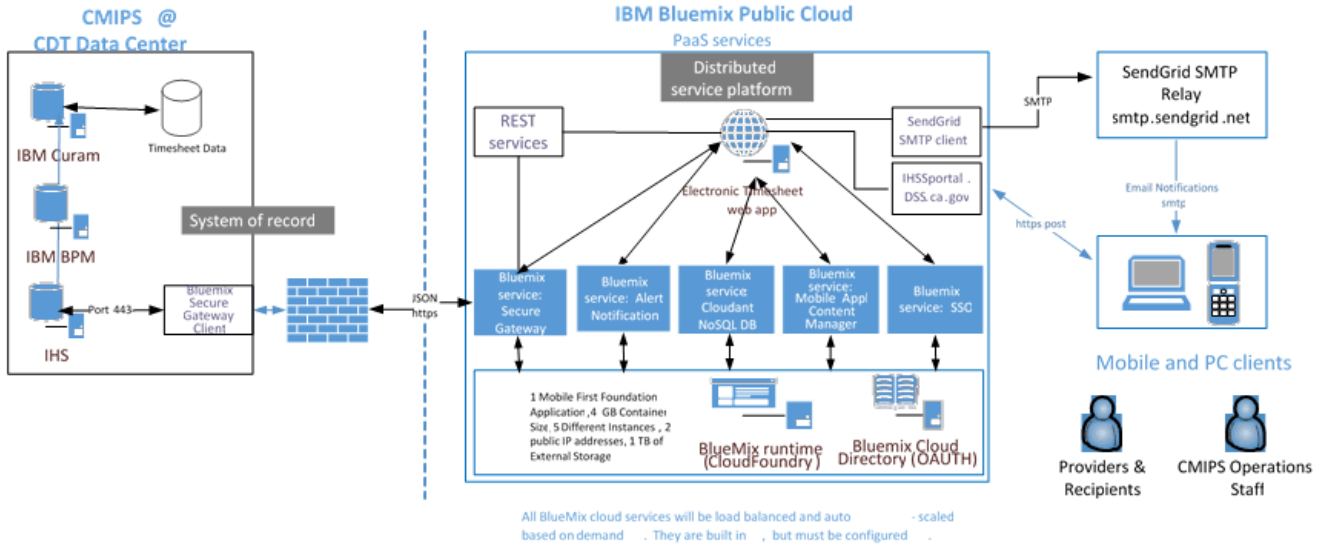


Figure – Electronic Timesheet – BlueMix Public Cloud (PaaS)

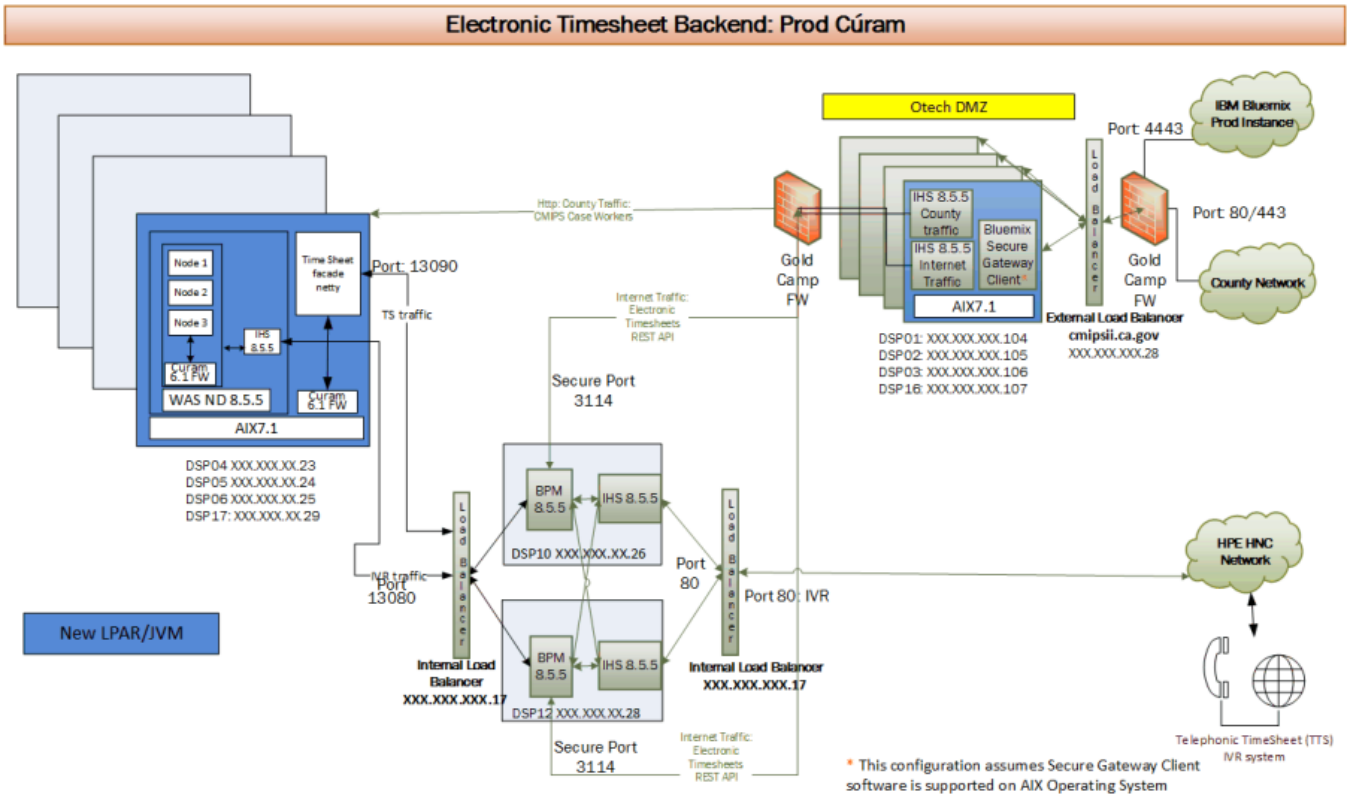


Figure – IHSS Website/CMIPS Network Diagram – CDT Production

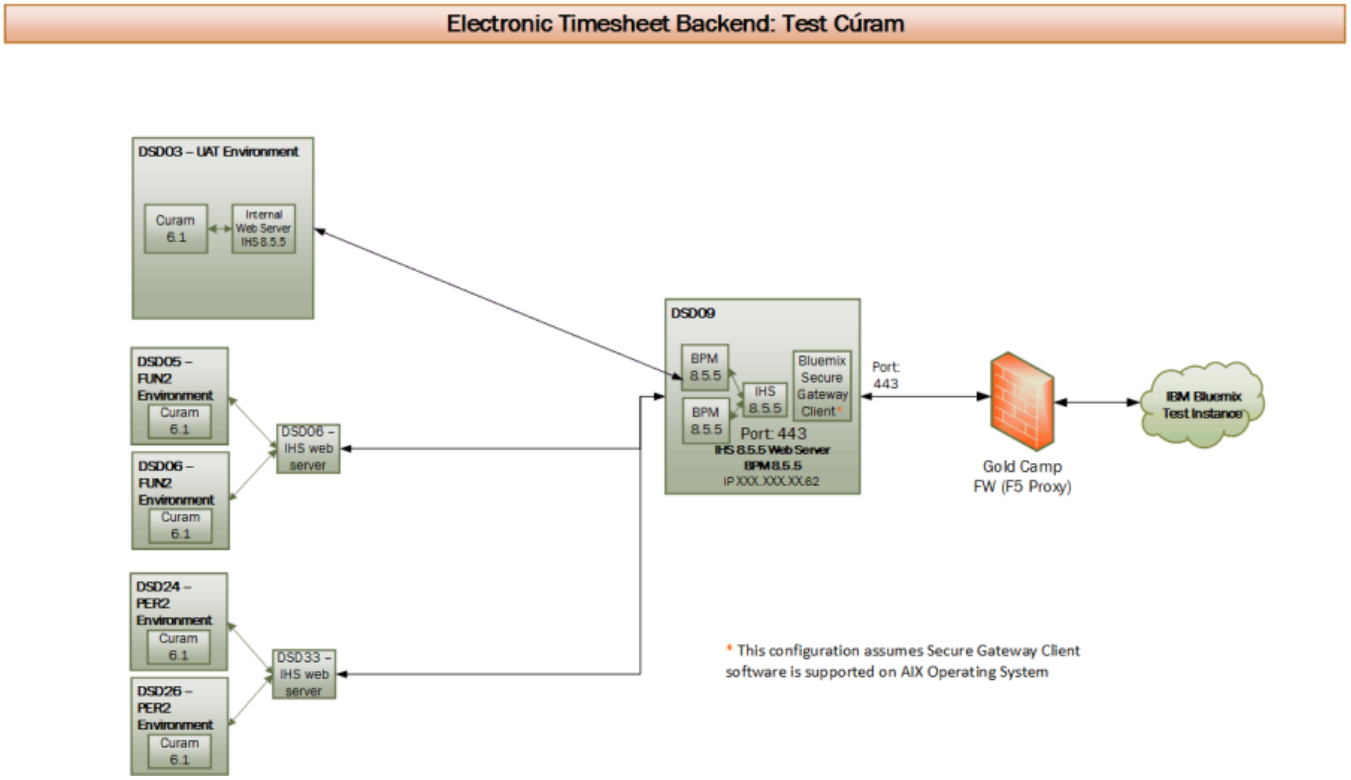


Figure – IHSS Website/CMIPS Network Diagram – CDT Test

DSD 10/Architecture – Timesheet Architecture/TPF Business Functional Specifications/Electronic Timesheet Business Functional Specifications

CI	Document Name
CI-753306 - DSD BF Electronic Timesheet Business Functional Specifications IMPLEMENTED	DSD_BF_Electronic_Timesheet_Business_Functional_Specifications.docx

By logging into the IHSS Website an IHSS or WPCS service Provider can submit their timesheet to CMIPS electronically. The Electronic solution includes notification to the Recipient that a timesheet has been submitted for approval; Recipient and Provider electronic signature for timesheets; entry error messages to assist the Provider in submitting a valid timesheet in order to prevent timesheet exceptions and County re-work. A Provider will also be able to request and submit supplemental timesheets via the IHSS Website.

Once a timesheet is submitted electronically and approved by the Recipient either through the IHSS Website or by utilizing the Telephonic Timesheet System or if it is released by batch processing it will continue through standard Case Management Processing for payment.

Provider and Recipient users will have the ability to contact an E-Timesheet Help Desk for assistance with the HIS Website either by phone or by submitting a request online from within the application.

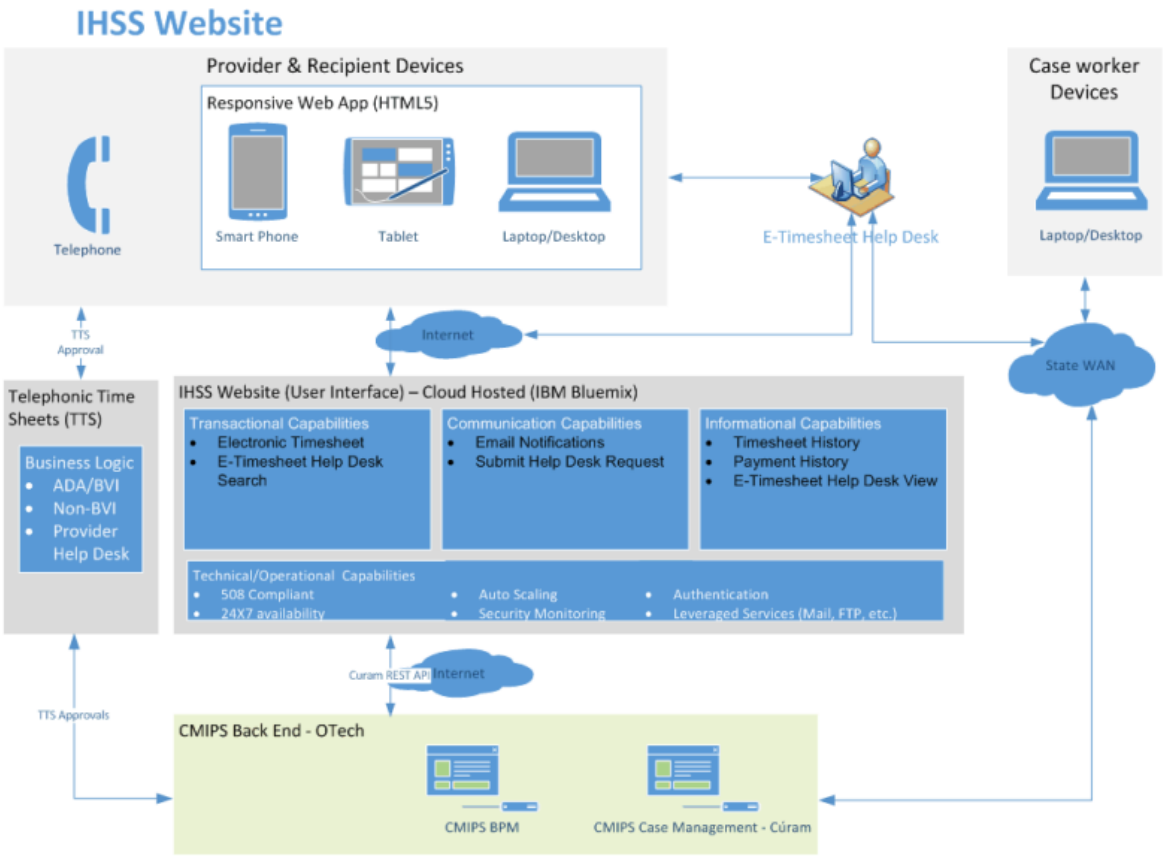


Figure – IHSS Website – E-Timesheets

DSD 10/Architecture – Timesheet Architecture/External Interfaces

The external interfaces are defined in the Interface Design Document (IDD).

DSD 10/Architecture – Timesheet Architecture/External Interfaces/Pre-Validated Timesheet Data (TPF to BAW to Cúram to CGI Advantage)

CI	Document Name
CI-118852 - DSD EINTF Pre Validated Timesheet Data IMPLEMENTED	DSD_EINTF_Pre_Validated_Timesheet_Data.doc

Timesheets are scanned and processed at the TPF. Extracted timesheet transactions are batched into small files placed in a directory on a secure server by TPF. A BAW asynchronous batch script is executed by AutoSys on regular intervals throughout the day to retrieve all files that are available at that run time. BAW places the files into a directory on the BAW process server (ProcServer). AutoSys then initiates a CRM batch script that processes the timesheet transactions in these files into the Case Management component of CMIPS.

When the Case Management component receives a batch of timesheet transactions, it performs various validation edits on each timesheet transaction. If the timesheet data passes these edits, the Case Management component issues a payment request to the Payroll component of CMIPS. This payment request is sent by the Case Management component to the Payroll component using an internal asynchronous Web service interface.

DSD 10/Architecture – Timesheet Architecture/External Interfaces/Timesheet Images (Cúram Requests from TPF)

CI	Document Name
CI-118853 - DSD EINTF Timesheet Images Curam Requests from TPF IMPLEMENTED	DSD_EINTF_Timesheet_Images_Curam_Requests_from_TPF.doc

In the Cúram based Case Management component, end-users have the ability to view timesheet images in real-time. This functionality is provided using a Web service-based transaction between the Case Management component and the TPF image storage component, over S3 protocol. The TPF stores the timesheet images and provides the on demand to end users through an interface with the TPF image storage component. Because these are real-time transactions, they are provided using a synchronous transaction. If a request for a timesheet image fails, Cúram displays an error message to the end-user immediately and appropriate actions can be taken.

DSD 10/Architecture – Timesheet Architecture/User Interface and Role-Based Security

CI	Document Name
CI-118851 - DSD EINTF User Interface and Role Based Security IMPLEMENTED	DSD_EINTF_User_Interface_and_Role_Based_Security.doc

Commercial Off-the-Shelf (COTS) Application Captiva provides user interface and role-based security for the TPF. Additionally, Captiva is installed inside a physical facility with an isolated network with a Data Management Zone (DMZ) boundary to external CGI-CDT networks. The three layers of security are:

1. Physical: by gaining access to the building and the specific machines with installed software
2. Password authentication and authorization: required to access the software components as managed by Captiva and based on the end-user's role
3. Business process need: determined by the Captiva workflow for proper processing of the form

DSD 11/Architecture – Development and Test Systems

The CMIPS Application minus the CGI TPF has five environments with one or more instances (CDT Production, CDT Disaster Recovery, CDT Testing, CGI Development and CGI MAS Development) to support operations, testing and development activities.

This section specifically addresses the development and testing of the custom application, COTS application, underlying middleware, operating systems and maintenance (version and patches). The description of production will first be covered to compare the Development and Testing environments. The application enhancements, maintenance, and bug fixes will pass through the respective Development and Testing environments with appropriate testing prior to being implemented into the Production environment.

DSD 11/Architecture – Development and Test Systems /CMIPS Environments

This section describes the use and structure of the CMIPS Production, Disaster Recovery, Testing and Development environments. The Configuration Management Plan and Data Center Site Specification describe the hardware and software component allocation and discuss keeping the environment hardware and software in sync between the various environments and instances. The Operations Plan details the process to configure and change the environment once it is approved by Release Management. The Customer Service Plan discusses how issues will be resolved in the environments and corrected throughout the environments. Refer to the following documents for additional information:

- Architecture Work Products
- CDSS Site Specification
- County Site Specification

NOTE: For LPAR Configuration, please refer to the LPAR Allocation document (CI 107,756) which is part of the Operations Manual. CMIPS will utilize micro-partitioning and dynamic logic partition techniques to reconfigure the production servers. The goal of this activity will be to create LPAR configurations that are optimized for online and batch processing. For additional information on the CDT CMIPS LPAR configuration details, reference deliverable D-4.5-19 LPAR Profile Configuration (CMIPShare > Document Center > Deliverables > D-4.5-19 LPAR Profile Configuration).

DSD 11/Architecture – Development and Test Systems /CMIPS Environments/CDT Production

CI	Document Name
CI-117904 - DSD BF OTech Production IMPLEMENTED	DSD_BF_CDT_Production.doc

CMIPS production is the foundation for the other environments. The components include Web server and portal, Commercial off-the-Shelf (COTS) applications, databases, and Storage Attached Network (SAN). The California Department of Technology (CDT) DMZ provides security for the components. The load balancer, switches, circuits and other network devices to provide connectivity and availability.

For details on the Production environment connectivity, network, Logical Partitions (LPAR), resource allocations, etc. review the following documents:

- Operations Plan
- Operations Manual
- System Security Plan

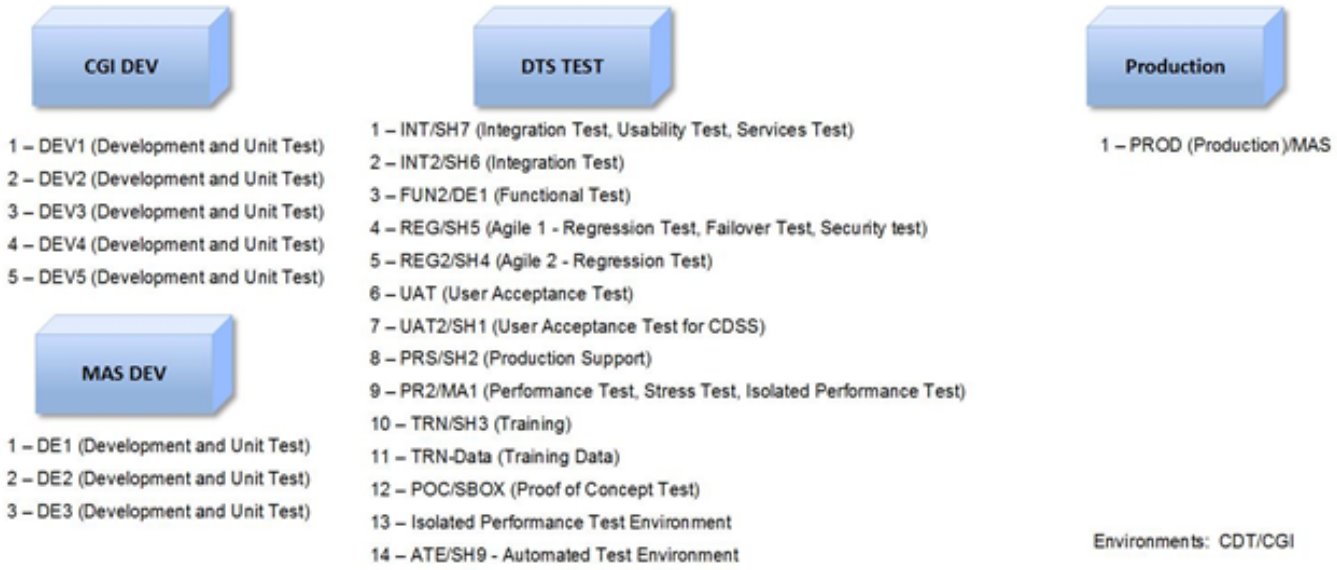


Figure – CMIPS Environment Design, Development and Implementation (DDI) Instances and Functions

DSD 11/Architecture – Development and Test Systems /CMIPS Environments/CDT Disaster Recovery

CI	Document Name
CI-117900 - DSD BF OTech Disaster Recovery IMPLEMENTED	DSD_BF_CDT_Disaster_Recovery.doc

The disaster recovery (DR) environment is maintained in a physically and geographically separate environment. The DR site is an inactive site that can be started up and configured to meet the SLA requirements specified in the contract SOW (6.10 Technology Recovery) of the CMIPS Application. The resources allocated for the servers are equivalent in capacity but are without any redundancy. This is reasonable since the DR site is only used when absolutely required and the reduction of complexity of redundancy is contrary to the need to rapidly restore service to the end-user community. Hence, the business need for a DR site is equal parts functionality and equivalent capacity for sustained operations without local DR redundancy. For additional details review the Technology Recovery Plan (CMIPShare > Document Center > Deliverables > 6.10-01 Technology Recovery Plan).

DSD 11/Architecture – Development and Test Systems /CMIPS Environments/CDT Test

CI	Document Name
CI-117902 - DSD BF CDT Test IMPLEMENTED	DSD_BF_CDT_Test.doc

The CMIPS Test environment is designed to use the same hardware and software components as the Production environment. This is an important point concerning the ability to correlate the test results from this environment to the results that will be expected from the Production environment. The CMIPS Test environments, particularly the Performance Test environment, duplicate the Production environment, with the exception that they are smaller environments.

The Test environments will include the same application tiers as the Production environment. The Test environments will also include the following isolated sub-environments, which will interface with corresponding MAS environments at the Phoenix Data Center (PDC) in order to replicate production interactivity:

- Integration – This is the environment where the CMIPS Testing team will conduct formal testing using QASymphony (qTest) and CMIPS-specific test scripts. These tests are specifically targeted at measuring the ability of the components to work together. CGI Advantage, Cúram, DB2, and WebSphere Application Server will be installed in this environment. Logical Security access to this environment will be limited to the CMIPS Testing team. The CMIPS Application requires the functions provided by this environment for the Maintenance and Operations (M&O) project phase. Please refer to the Operations Plan for more specific details.
- Functional – This is the environment where the CMIPS Testing team will conduct formal testing using QASymphony (qTest) and CMIPS-specific test scripts. These tests are specifically targeted at measuring compliance to the approved CMIPS Application requirements for the entire system. CGI Advantage, Cúram, DB2, and WebSphere Application Server will be installed in this environment. Logical Security access to this environment will be limited to the CMIPS Testing team. CMIPS requires the functions provided by this environment for the M&O project phase. Please refer to the Operations Plan for more specific details.
- Automated Test Environment (ATE) - This is the test environment where the CMIPS Testing team will conduct automated scripting and execution using Application Lifecycle Management (ALM) and Unified Functional Testing (UFT) for the CMIPS-specific end-to-end regression test scripts. These tests are specifically targeted for performing end-to -end regression testing and measuring the ability of the components to work together in automated manner. CGI Advantage, Cúram, Business Object (BO), DB2, and WebSphere Application Server will be installed in this environment. The new test environments will be built in Amazon Web Services (AWS) for the Electronic Visit Verification (EVV) Location Services, Electronic Services Portal (ESP), IHSS EVV Mobile Application, CommsHub, and Autosys. Autosys will be configured for daily/nightly batch processing. Logical Security access to this environment will be limited to the CMIPS Testing team. The CMIPS project requires the functions provided by the Automated Test Environment to perform Automated Testing by Agile Testing and Release Readiness Testing. Please refer to the Operations Plan for more specific details.
- User Acceptance Test – This is the environment where the CMIPS User Acceptance Testing (UAT) team will conduct their formal testing using CMIPS-specific test scripts and a SharePoint repository. These tests will verify that the application can support the documented State and county work scenarios and workflows based on the approved CMIPS Application requirements, and any new requirements from project change requests. The CGI Advantage®, Cúram, DB2, and WebSphere Application Server will be installed in this environment. Logical Security access to this environment will be limited to the CMIPS UAT team. The CMIPS System requires the functions provided by this environment for the M&O project phase. Please refer to the Operations Plan for more specific details.

- Regression – This environment is used by the Agile teams, and is where the CMIPS Testing team will conduct regression Testing using QASymphony (qTest) and CMIPS-specific test scripts. Regression Tests will verify that that new features or corrections do not cause problems in existing system functions. The CGI Advantage®, Cúram, DB2, and WebSphere Application Server will be installed in this environment. Logical Security access to this environment will be limited to the CMIPS Testing teams. The CMIPS System requires the functions provided by this environment for the Design, Development and Implementation (DDI) and M&O project phases. Please refer to the Operations Plan for more specific details.
- Training – This environment is where the CMIPS Training team develops, tests, and conducts formal classroom training for the CMIPS State and county users. The CGI Advantage®, Cúram, DB2, and WebSphere Application Server will be installed in this environment. Logical Security access to this environment will be limited to the CMIPS Training team and registered students. CMIPS requires the functions provided by this environment for both the DDI and M&O project phases. Please refer to the Operations Plan for more specific details.
- Performance – This is the environment where CMIPS project teams will perform system performance testing. This environment is equivalent to the Production environment, but does not have the redundant capability. The CMIPS teams will tune the CMIPS Application, validate production processes, and capture system performance metrics in support of the required service level. The CGI Advantage®, Cúram, DB2, and WebSphere Application Server will be installed in this environment. Logical Security access to this environment will be limited to the CMIPS project team. The CMIPS Application will require the functions provided by this environment for both the DDI and M&O project phases. Please refer to the Operations Plan for more specific details.
- Stress executed in Performance Test Instance – This is the environment where CMIPS project teams will perform system stress testing. This environment shares the same system components as the Performance Test environment. Please refer to the Operations Plan for more specific details.
- Technology Recovery (TR) executed in Regression Test – This is the environment where CMIPS project teams will develop and test the TR procedures and processes. This environment shares the same system components as the Performance Test environment. The full TR procedures, triggers, escalation, etc. will be covered in the Technology Recovery Plan. The Technology Recovery Plan and the Statement of Work (SOW) requires execution of a walk-through and exercise prior to production operations. Please refer to the Operations Plan and the Technology Recovery Plan for more specific details.
- POC/SBUX – The CMIPS project team will utilize this environment for proof of concept development and testing of new tools and packages, as well as testing for the latest patches and service packs released by software vendors. Please refer to the Operations Plan for more specific details.

For details on the Test environments connectivity, network, LPARs, resource allocations, etc., review the following documents:

- Operations Plan
- Operations Manual
- System Security Plan

DSD 11/Architecture – Development and Test Systems /CMIPS Environments/CGI Development

CI	Document Name
CI-117901 - DSD BF CGI Development IMPLEMENTED	DSD BF CGI Development

The following are the CGI development environments hosted on Azure VM:

- 1APP01 – This is the environment where Cúram is installed and is maintained with all the same software, redundancy, and operating system as the Production environment but not the same hardware. The biggest difference is that the development environment is not configured for redundancy or high availability.
- 1DB201 – This is the environment which houses the DV1 DB server.
- 1DBW01 – This is the environment which houses DV1 DB2 warehouse.
- 1SAP01 – This is the DV1 Reports server.

Review the CMIPS Hardware and Software Inventory (CMIPShare > Document Center > Deliverables > 6.13-01 CMIPS Hardware and Software Inventory) and ADD Development Environment section for specific information regarding the CGI Development environment.

DSD 11/Architecture – Development and Test Systems /CMIPS Environments/High-Level Overview of CMIPS Functionality Testing Process Before Deploying to Production

CI	Document Name
CI-117903 - DSD BF High Level Overview of CMIPS Func Testing Process Before Prod IMPLEMENTED	DSD BF High Level Overview of CMIPS Func Testing Process Before Prod

The CMIPS Application Test Execution Strategy defines the various phases that focus on dynamically validating the system, including developed code, Web pages, reports, business functions, end-to-end transactions and batch processing. Each phase will have a documented plan of execution that includes a controlled approach to testing, test specifications, execution schedule, resource requirements and completion criteria. Output from each test phase will be a set of defects that are managed to resolution within a defined repeatable process.

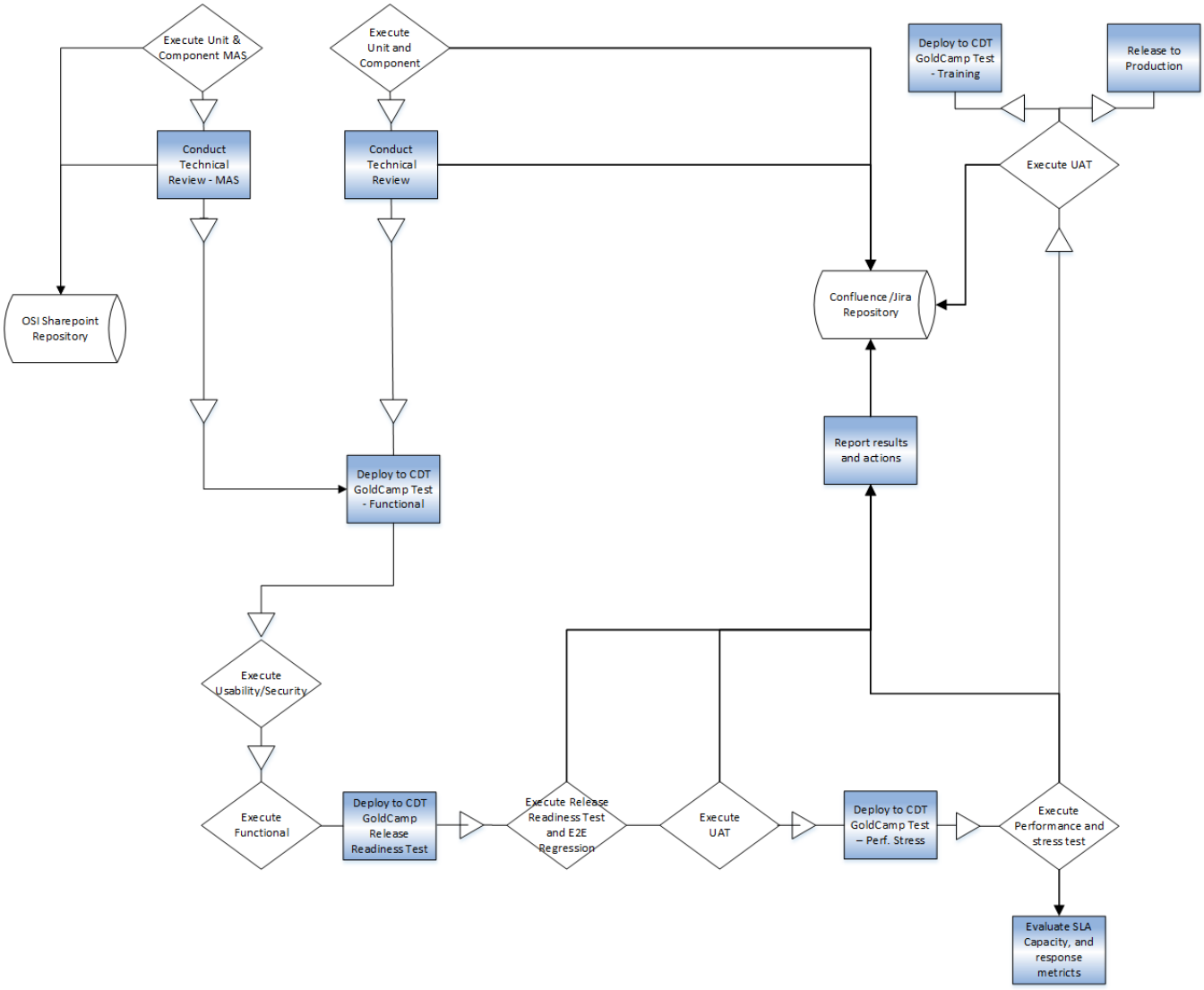


Figure – CMIPS Code Promotion Flow

The CMIPS strategy sequence for test execution is as follows:

1. Unit Test

   This phase occurs in the CMIPS Development environment once the team initiates the development phase. The CMIPS Development team will develop the units; each unit will be tested and the units will be combined into components and each component will be tested until they are

combined into a complete and functional component.

The testing is completed in the CDT Development and CDT Development Interface Environments.

2. Integration Test

   Once the Development team has successfully unit tested a bundle of code, Integration Testing will be performed by a business analyst who is part of the Development team. The business analyst will evaluate the results based upon the requirements and their associated business processes.

3. System Test Phase

   The CMIPS Test team will perform the System Testing. The System Test phase focuses on testing the application functionality from end-to-end by executing the configured items that support a specific business function under various conditions.

   To limit the number of variables in testing the functions of the entire system, the System Test phase is broken down into various test types including:
   a. Data Conversion Testing
   b. Usability Testing
   c. Functional Testing
   d. Security Testing
   e. Performance Testing
   f. Stress Testing
   g. Regression Testing

4. User Acceptance Test Phase

   The User Acceptance Test phase focuses on testing the application's functionality from the State user's point of view in an environment that is most like a Production environment. The State will verify that the application satisfies the functional and business requirements using typical production scenarios.

   After successful execution of UAT, the code is deployed to the Production environment.

   The System Performance Test Plan covers details pertaining to Service Level Agreements evaluation, capacity and response metrics.

   The System Test Plan covers the activities associated with Functional, System Performance, Regression and User Acceptance Tests.

DSD 11/Architecture – Development and Test Systems /External Interfaces

There are no external interfaces associated with this track and topic.

DSD 11/Architecture – Development and Test Systems/User Interface and Role-Based Security

There is no user interface and role-based security associated with this track and topic.

DSD 12/Architecture - Help Sub System

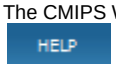
This document will provide the high-level overview of the CMIPS help subsystem solution. The CMIPS solution utilizes Cúram validation messages for the first level of user assistance. For second level user assistance, CMIPS has two HTML-based online help systems. One help system is accessed from the Help link in the CMIPS Web portal. The other system includes detailed task assistance and context-sensitive screen descriptions, and is accessed from the Case Management system. These help systems were authored using an industry-leading authoring tool called Madcap Flare.

DSD 12/Architecture - Help Sub System/Business Functional Specifications

CI	Document Name
CI-117899 - DSD BF Business Functional Specifications Help Sub System IMPLEMENTED	DSD_BF_Business_Functional_Specifications_Help_Sub_System.doc

Cúram provides the first level of detail to the user when the user performs an incorrect action on a screen. This help appears in the form of customized error text or OOTB error text.

The second level of user assistance is provided by clicking the question-mark icon ( ) on the top right hand corner of each Case Management screen. The help is context-sensitive, meaning that when the user accesses it from a particular screen, help related to that screen is displayed. This context-sensitive help is specific to Case Management.

The CMIPS Web Portal also provides a help system, but it is not context-sensitive. The CMIPS Web Portal's help system is launched from the Help link 

in the upper-right hand portion of web portal screens.

In all cases, the help subsystem will have correct spelling and grammar in U.S. English, and will be consistent in font, color, format, text case and style. Note: The CMIPS Web Portal help system has a different color palette than the Case Management help system.

DSD 12/Architecture - Help Sub System/Screen Designs

DSD 12/Architecture - Help Sub System/Screen Designs /Case Management Screen Showing Level 1 Help

CI	Document Name
CI-116680 - DSD SC CMIPS Case Management Screen Showing Level 1 Help IMPLEMENTED	DSD_SC_CMIPS_Case_Management_Screen_Showing_Level_1_Help.doc

As shown in the following Case Management screenshot, Cúram provides the first level of detail to the user when the user performs an incorrect action in a validation message – in this scenario creating a Provider without providing all the necessary information.

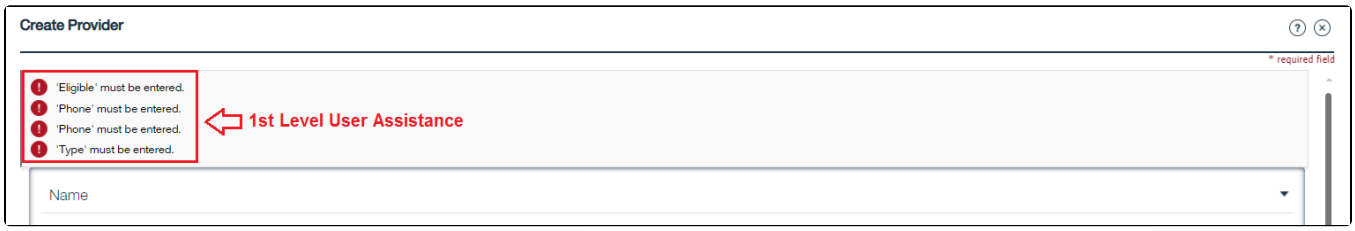


Figure – CMIPS Case Management Screen Showing Level 1 Help

The error messages shown in the screenshot above show the customized error text in response to an invalid user action. Error messages are displayed for mandatory fields and data validation. Data validation edits are defined to be unique to the content and processing of each screen. Case Management error messages may be customized error text or OOTB error text.

DSD 12/Architecture - Help Sub System/Screen Designs /Case Management Screen Using the Index

CI
CI-116682 - DSD SC CMIPS Case Management Screen Using the Index CANCELLED

This is cancelled by ASR Feature 4 - Curam Upgrade.

DSD 12/Architecture - Help Sub System/Screen Designs /CMIPS Portal Manual Screen and Help Manuals

CI
CI-116684 - DSD SC CMIPS Portal Manual Screen and Help Manuals CANCELLED

This is cancelled by ASR Feature 4 - Curam Upgrade.

DSD 12/Architecture - Help Sub System/Screen Designs /Left Navigation Pane

CI
CI-116679 - DSD SC CM Help System Left Navigation Pane IMPLEMENTED

The Case Management help system is divided into two sections: the left navigation pane and right content pane.

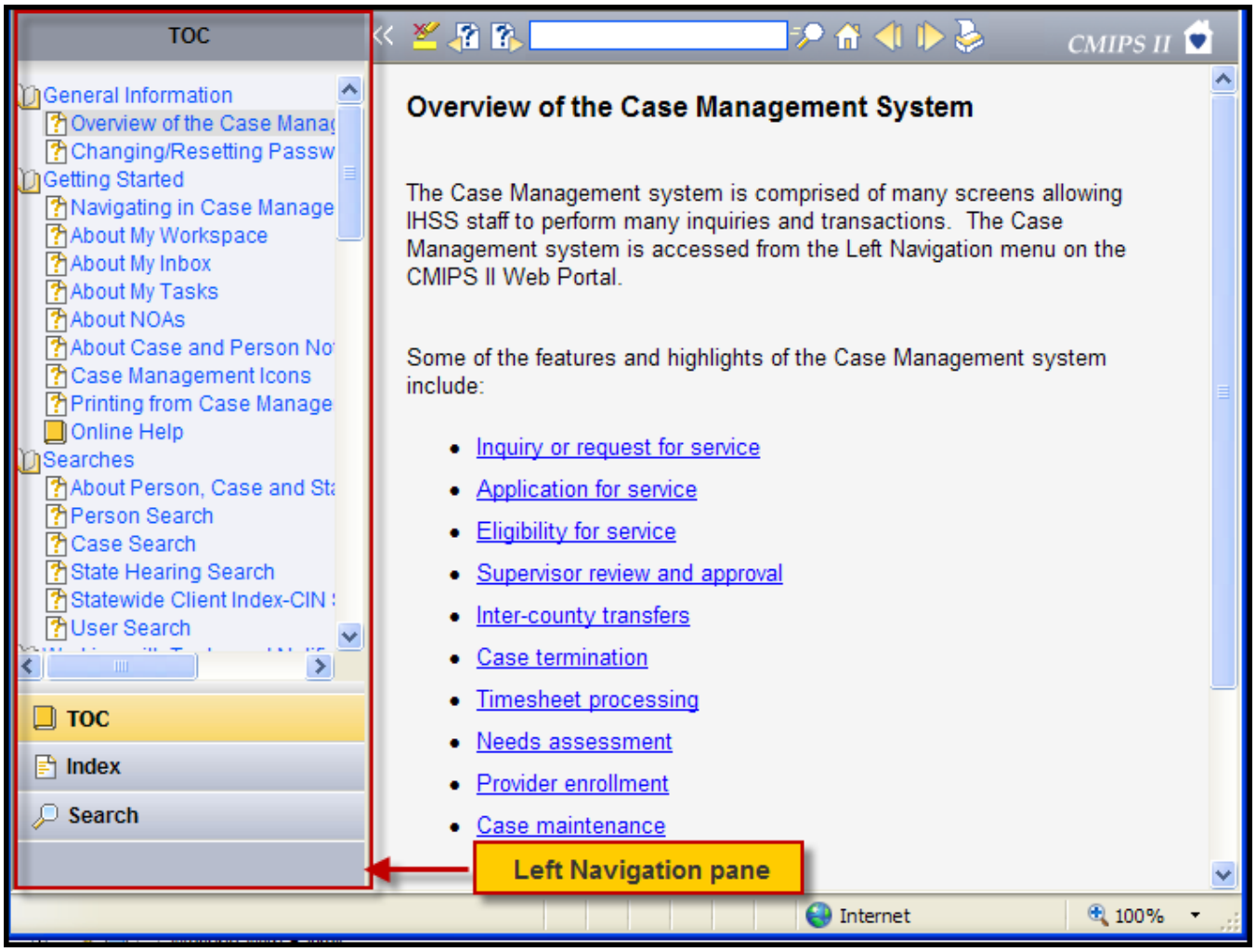


Figure – CMIPS Case Management Screen Left Navigation Pane

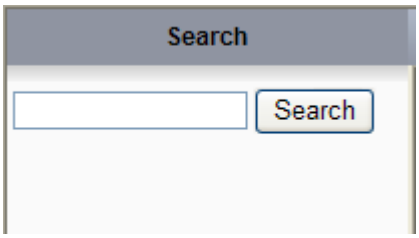
In the left navigation pane, the table of contents displays in an expandable and collapsible tree structure. The tree structure topics are organized by functional areas and business flow. Double-clicking on a section heading causes that section to expand, displaying any topics contained within that section as well as the next-level section headings. Users can continue this process until they have drilled down to the lowest possible level of section headings. Conversely, double-clicking on expanded headings will cause them to contract again.

The left navigation pane also contains Index and Search functions. The Index helps users find topics in the help files via keywords. There are four ways to search in the help system. This applies to both the CMIPS Web portal and Case Management Help system.

For more information on the right content pane, please refer to: CI-116683 - DSD SC CMIPS Help System Right Content Pane.

To Search for a Topic Using the Search Tab:

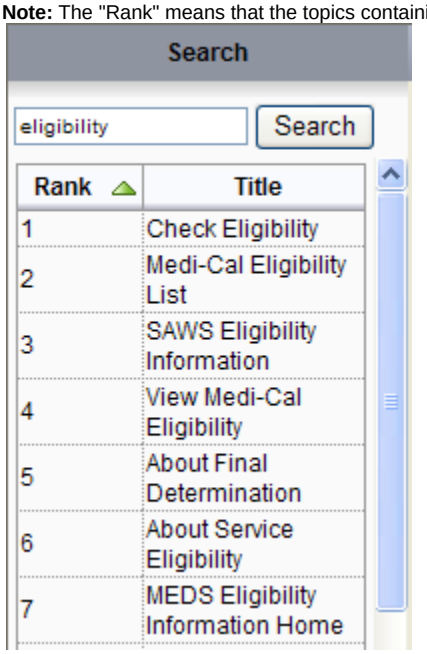
1. From the help system left navigation pane, click the **Search** tab ( ).

The Search box displays in the left navigation pane. 

2. Users should type in a topic that they would like to find. For example, type in *eligibility*.

   All topics that have the word eligibility in them displays in the Left Navigation menu.

   Note: The "Rank" means that the topics containing the most occurrences of the keywords are ranked higher.



3. Select the topic the user wants to view.

   The selected topic displays in the right pane. The word *eligibility* is highlighted in the text.

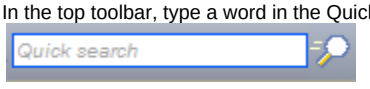
To Search for a Topic Using the Table of Contents (TOC)

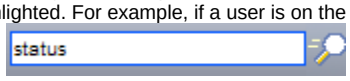
1. From the left navigation pane, expand the Table of Contents by clicking on a book. Click on the topic the user wants to view.

   The topic displays in the right pane.

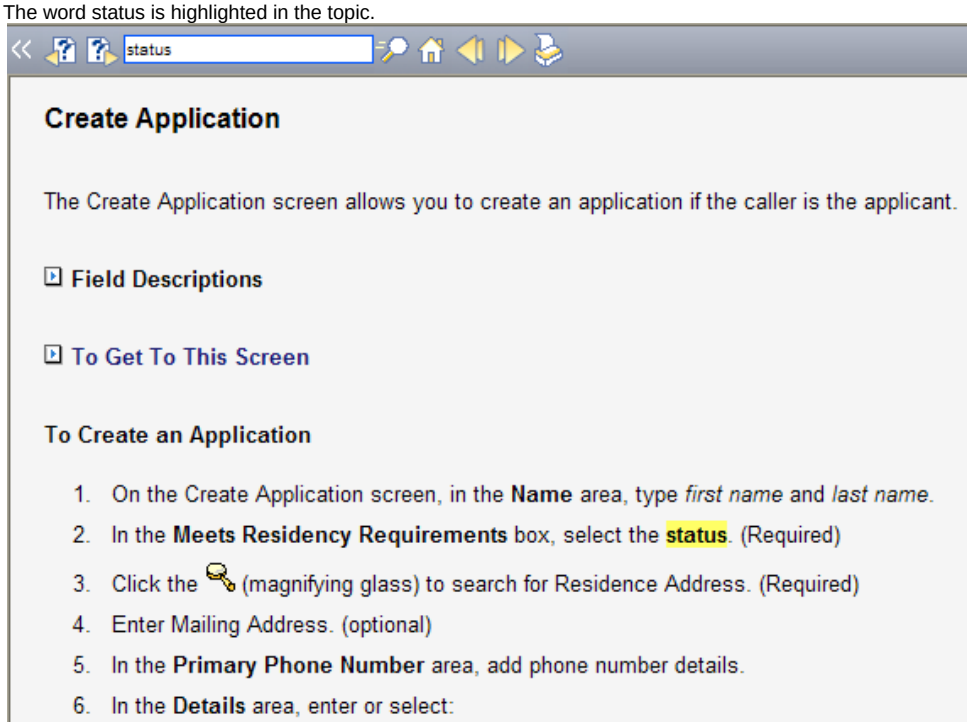
To Do a Quick Search

1. In the top toolbar, type a word in the Quick Search box.



2. Depending on what topic the user is on, the Quick Search will find that word in the current topic and highlight it. If it is not found, then nothing is highlighted. For example, if a user is on the Create Application screen and wants to find out information about residency status, type the word *status*. 

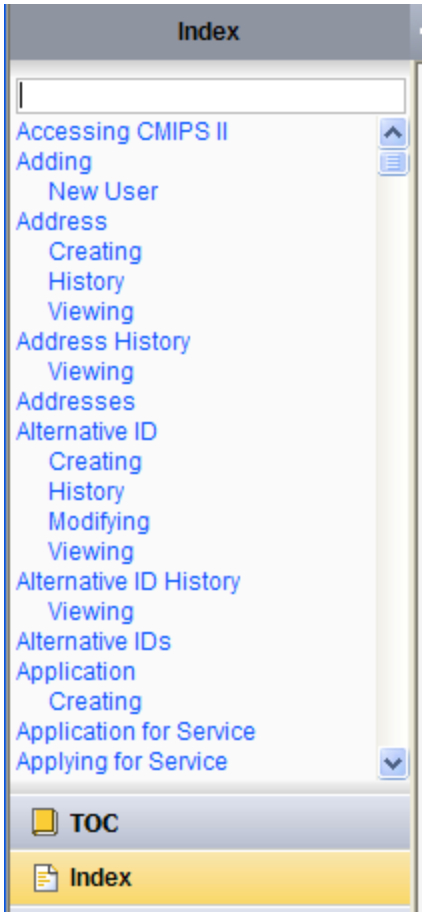
The word status is highlighted in the topic.



To Use the Index

1. From the help system left navigation pane, click the **Index** tab ( ).

   The Index displays in the left navigation pane.



When a user clicks an index keyword, the first related help topic displays.

Then, when a user clicks an index keyword that is related to more than one help topic, those topics are listed in the Index Results window pane. A user can then click any of those help topics to display it.

2. For example, click the **Alternative ID** link.

   The Alternative ID topic displays in the right pane.

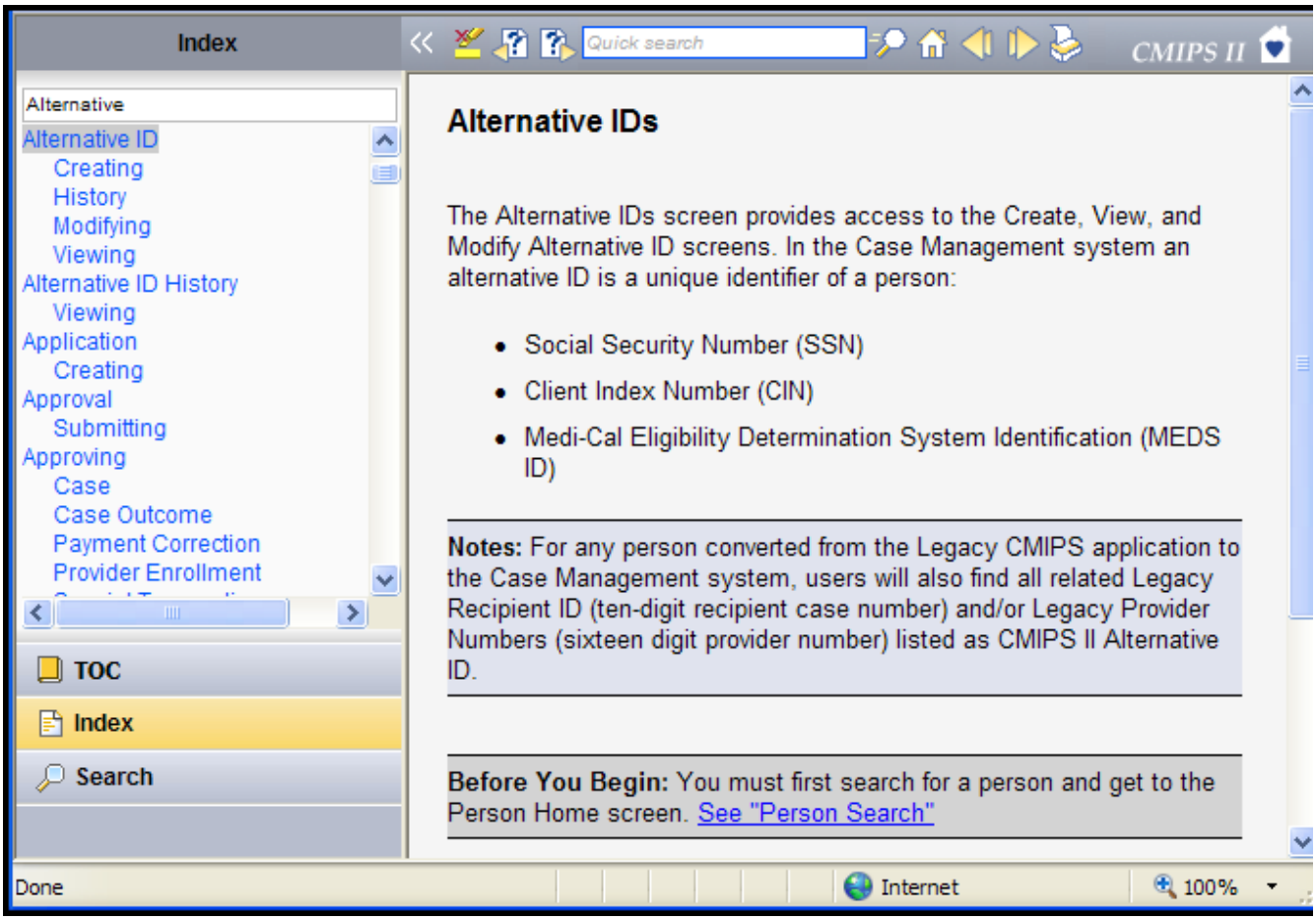


Figure – CMIPS Case Management Screen Using the Index

DSD 12/Architecture - Help Sub System/Screen Designs /Right Content Pane

CI
CI-116683 - DSD SC CMIPS Help System Right Content Pane IMPLEMENTED

The Case Management help system is divided into two sections: the left navigation pane and right content pane.

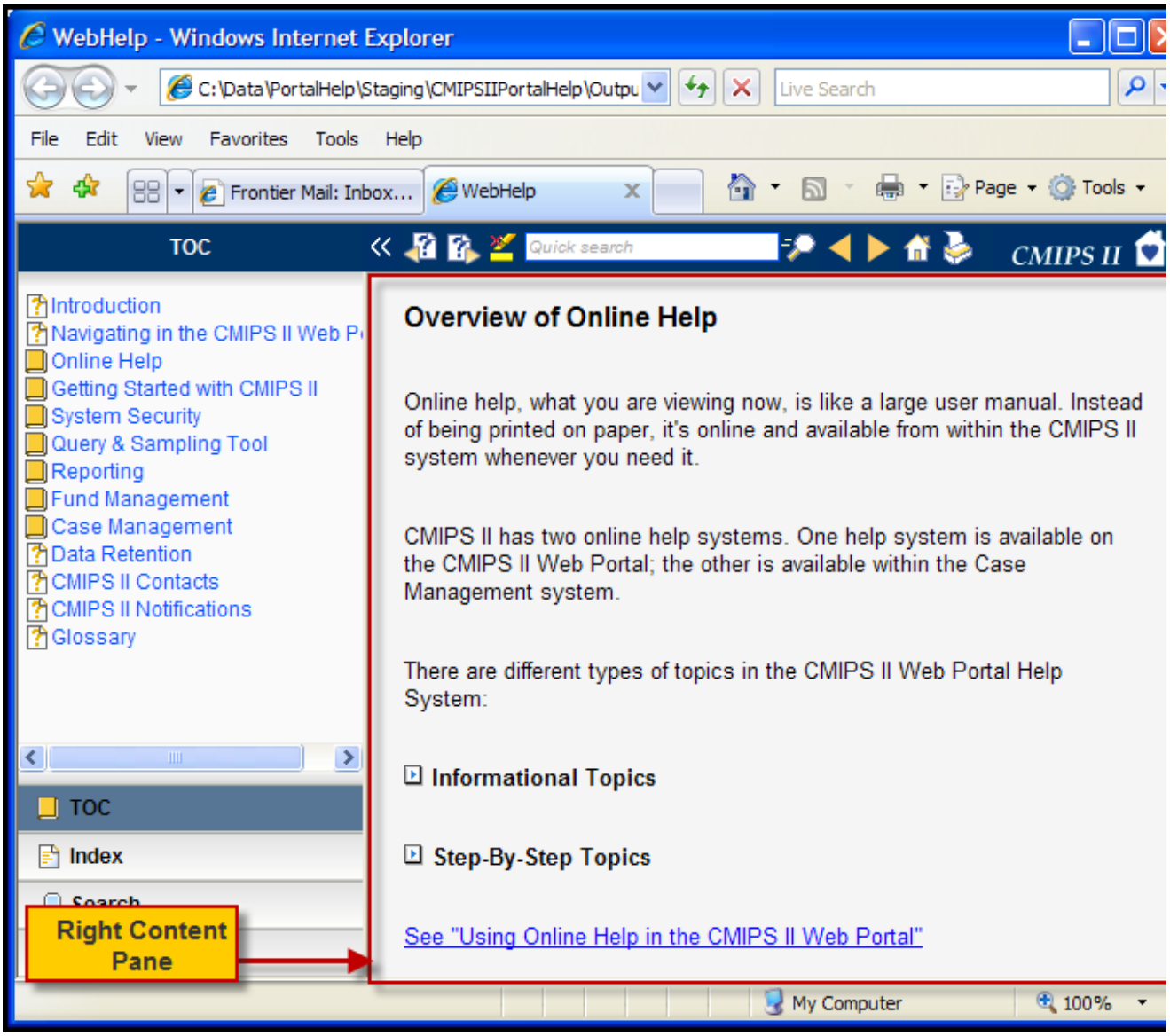


Figure – CMIPS Help System Right Content Pane

The table below lists the different types of topics available in the right content pane of Online Help. When users click the Online Help icon on a screen, immediate and relevant assistance is provided. The topic briefly describes the purpose of the screen being viewed, provides step-by-step instructions for the procedure on the screen, and provides links that lead to additional assistance. The Case Management context-sensitive topics include field descriptions as well. These topics are also listed in the Online Help Table of Contents.

Name	Description

Informational Topics	Informational topics address the user's need to find a specific piece of information. Among these topics are overview or workflow information, introductory information, guidelines, and related topics. These topics are listed in the Table of Contents and are internal to the Online Help system.
Step-By-Step Topics	Topics with step-by-step instructions accomplish a particular procedure (for example, How to Reset a Password). The step-by-step instructions are listed in the Table of Contents of the online help system, in the same manner as in a paper manual.

DSD 12/Architecture - Help Sub System/Screen Designs /System Glossary

CI	Document Name
CI-116678 - DSD SC CMIPS Case Management Help System Glossary IMPLEMENTED	DSD_SC_CMIPS_Case_Management_Help_System_Glossary.doc

The help system also contains a glossary. The glossary is accessed from the left navigation pane. The glossary contains a list of key topics in alphabetical order.

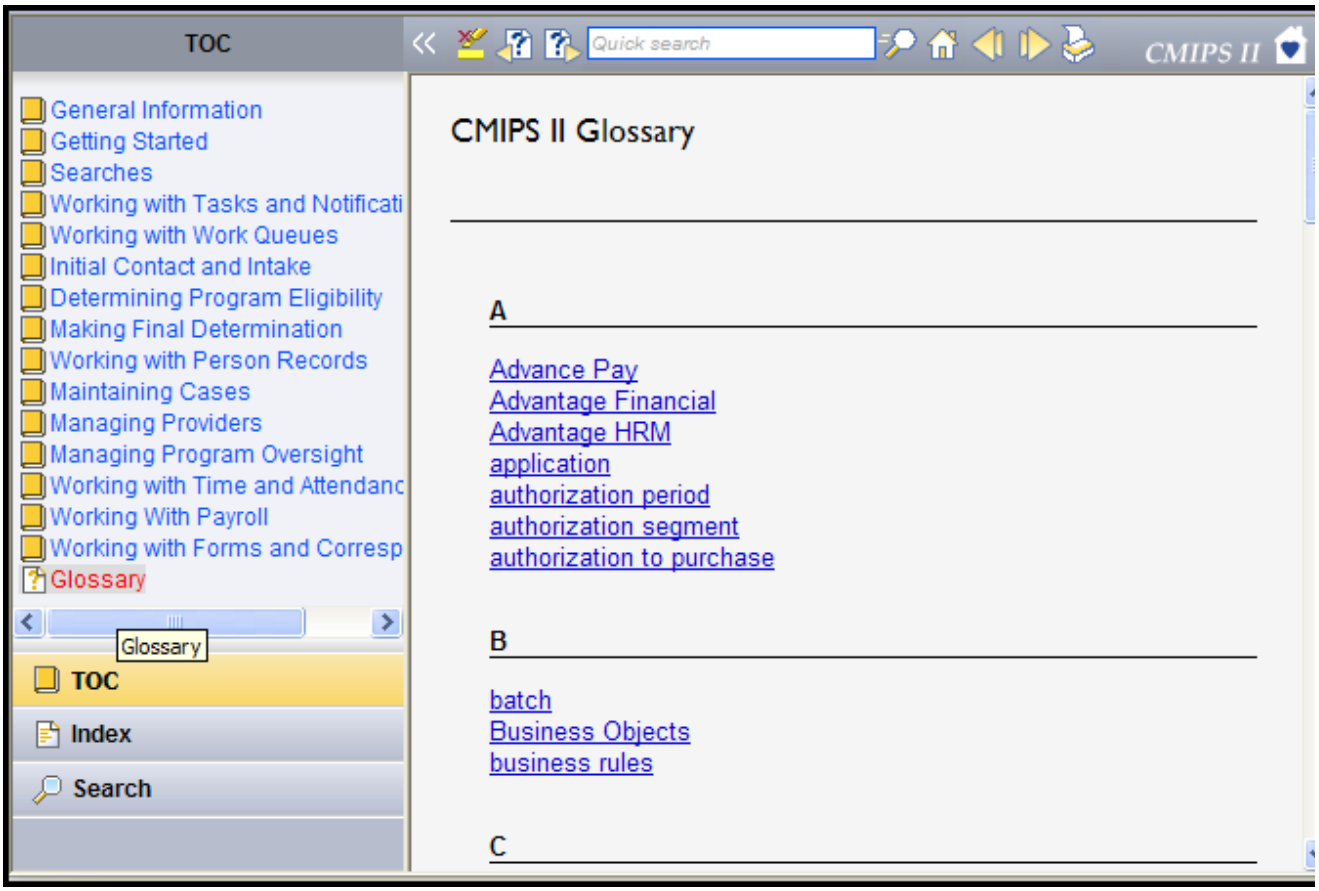


Figure – CMIPS Case Management Help System Glossary

DSD 12/Architecture - Help Sub System/Screen Designs /Case Management Screen Showing Level 2 Help

CI	Document Name
CI-116681 - DSD SC CMIPS Case Management Screen Showing Level 2 Help IMPLEMENTED	DSD_SC_CMIPS_Case_Management_Screen_Showing_Level_2_Help.doc

The following screen shot displays the second level of help in the Case Management system. The context-sensitive help topic displays in another browser window on top of Case Management. The second level of user assistance is provided by clicking the question mark icon ( ) on the top right hand corner of any Case Management screen (including popups).

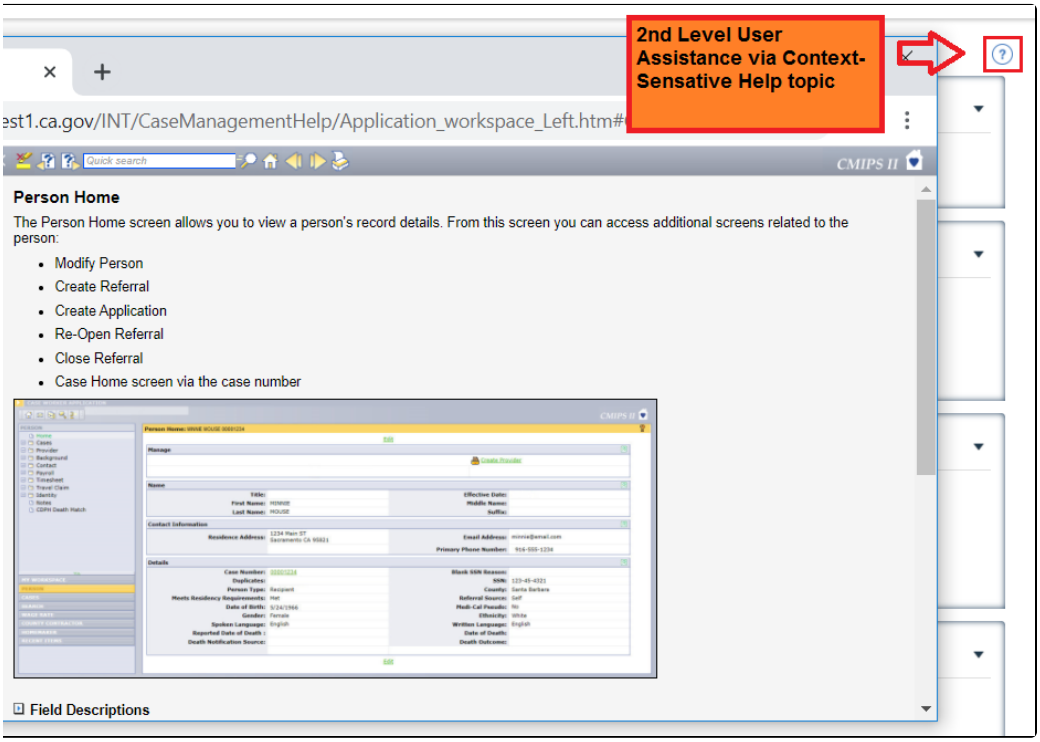


Figure – CMIPS Case Management Screen Showing Level 2 Help

DSD 12/Architecture - Help Sub System/User Interface and Role-Based Security

There is no user interface and role-based security associated with this track and topic.

DSD 12/Architecture - Help Sub System/External Interfaces

There are no external interfaces associated with this track and topic.

DSD 13/Architecture - Reporting Architecture

The CMIPS reporting architecture provides the standard reporting functions as role-based security and the ability to sort and/or group report data. These standard functions are provided through the BusinessObjects/Crystal Reports components of the architecture. The CMIPS reporting architecture does not allow for the execution of on-demand or batch reports against the production CMIPS database. A separate CMIPS Reporting database is maintained that has been optimized to support report generation. The use of a separate Reporting database prevents a report user from modifying the CMIPS production data and reports.

Note: The reporting portion of the DSD discusses the architecture and functionality of the reporting solution for CMIPS. The detailed reports, such as exception reports, are discussed in the following DSD sections and plans.

- Performance section of DSD
- Security section of DSD
- Data Retention section of DSD
- Reporting Database section of DSD
- Capacity Management Plan
- Operations Plan
- Customer Service Plan
- Communications Plan

The Reporting Architecture does not list the individual reports that are being discussed in each DSD section. If a list is desired, please refer to the specific DSD section for COTS reports or the Reporting Database DSD for BusinessObjects-generated reports.

DSD 13/Architecture - Reporting Architecture/Business Process - Reporting Overview

CI	Document Name
CI-119183 - DSD BF Reporting Overview IMPLEMENTED	DSD_BF_Reporting_Overview.doc

CMIPS users will be able to generate on-demand reports, as well as queue reports to be printed in batches at night. The user will have the option to print or download the reports to various office tools for further manipulation. The CMIPS Application will support the production of the following:

- On-demand Reports
- Daily Reports
- Weekly Reports
- Bi-weekly Reports
- Semi-Monthly Reports
- Monthly Reports
- Quarterly Reports
- Yearly Reports

BusinessObjects/Crystal Reports will be used to generate reports during the nightly batch cycle. The system will send these reports directly to the County's CMIPS printers, where they will be stored until released by an authorized print operator.

Note: COTS-generated reports address storage-retention and accessibility.

The reporting architecture features a highly cohesive combination of standard and industry-leading components. These components include:

- CMIPS User Terminals
- BusinessObjects/Crystal Reports
- DB2 Database
- CMIPS Printer
- Other networked or attached printers
- Print operator

The following figures provide an overview of the batch and on-demand reporting processes.

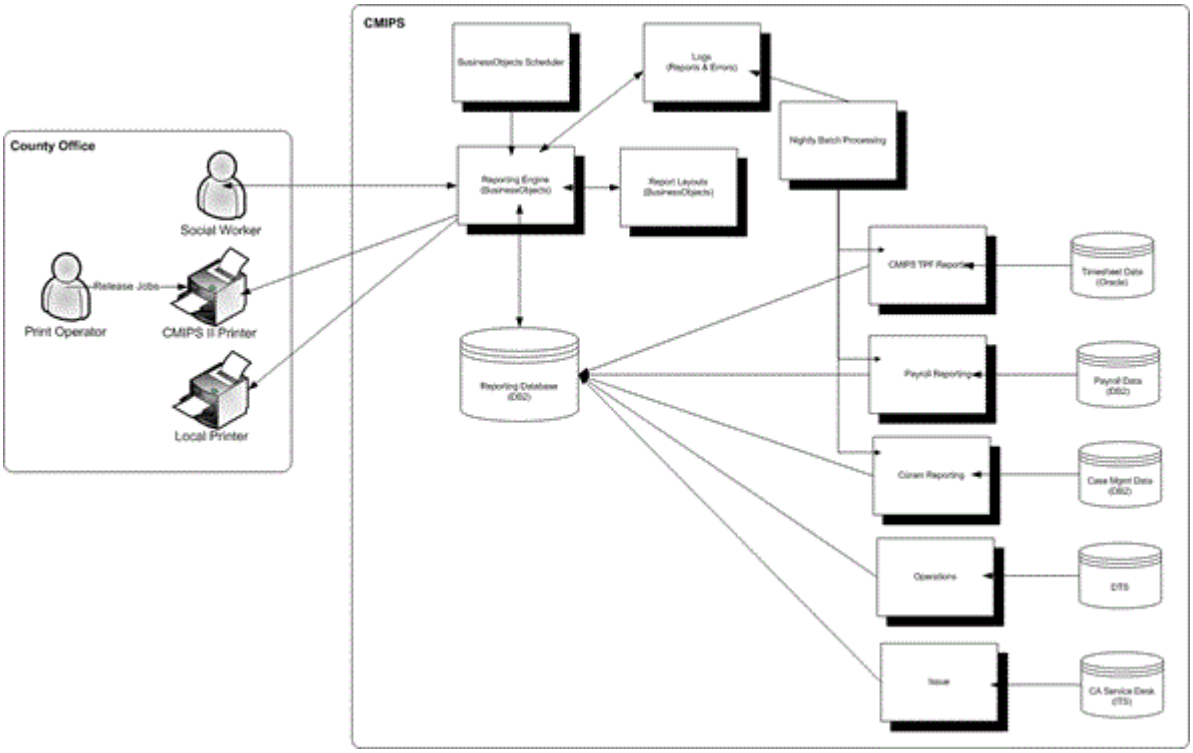


Figure – Reporting Batch Overview

The above figure shows the flow of information from the Operational database via an ETL extraction of data into an internal interface file format. This internal interface file is then transferred to and imported into a DB2 Replica database housed on the Reporting database server. After the internal interface batch jobs are completed, the nightly report generation batch job is started to create and distribute the standard reports. This distribution may be to an individual BusinessObjects Account, to a CMIPS printer then printed, or to a CMIPS printer then held in the print queue until the print operator releases the print job.

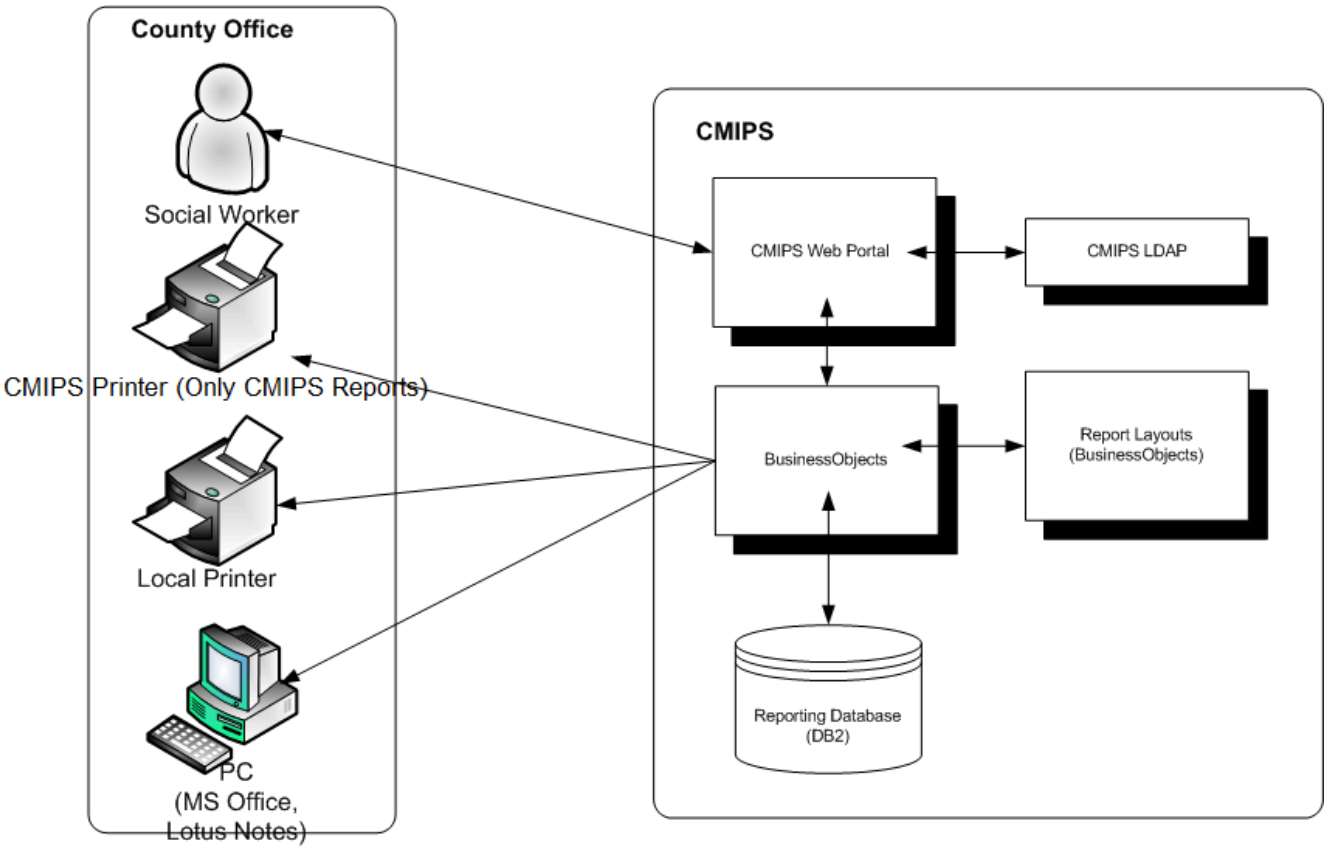


Figure – Reporting On-Demand Overview

The above figure shows the flow of information from a user interaction with BusinessObjects. The user can enter BusinessObjects and view standard reports pre-run as part of nightly batch or schedule a report to run. The user can also distribute the report to a CMIPS printer then print it, to a CMIPS printer then hold within the print queue until the print operator releases the print job or selects a locally-defined printer for printing.

After on-demand and batch reports have been generated, CMIPS will save the report in the user's report list. This function will allow the user to view historical reports. A historical report is a report that the user has requested in the past.

DSD 13/Architecture - Reporting Architecture/Business Process - Reporting Overview/Business Process Function – On-Demand Requests

CI	Document Name
CI-119184 - DSD BF On-Demand Requests IMPLEMENTED	DSD_BF_On-Demand_Requests.doc

BusinessObjects/Crystal Reports will generate the online and batch reports. For online generation, the BusinessObjects/Crystal Reports process retrieves the appropriate report definition from the BusinessObjects repository and dynamic data from the CMIPS Reporting Database to create the report. BusinessObjects/Crystal Reports then returns the "refreshed" report to the user's browser for viewing.

Business Process Flow – On-Demand Requests

The following figure shows the overview of the CMIPS on-demand reports request process.

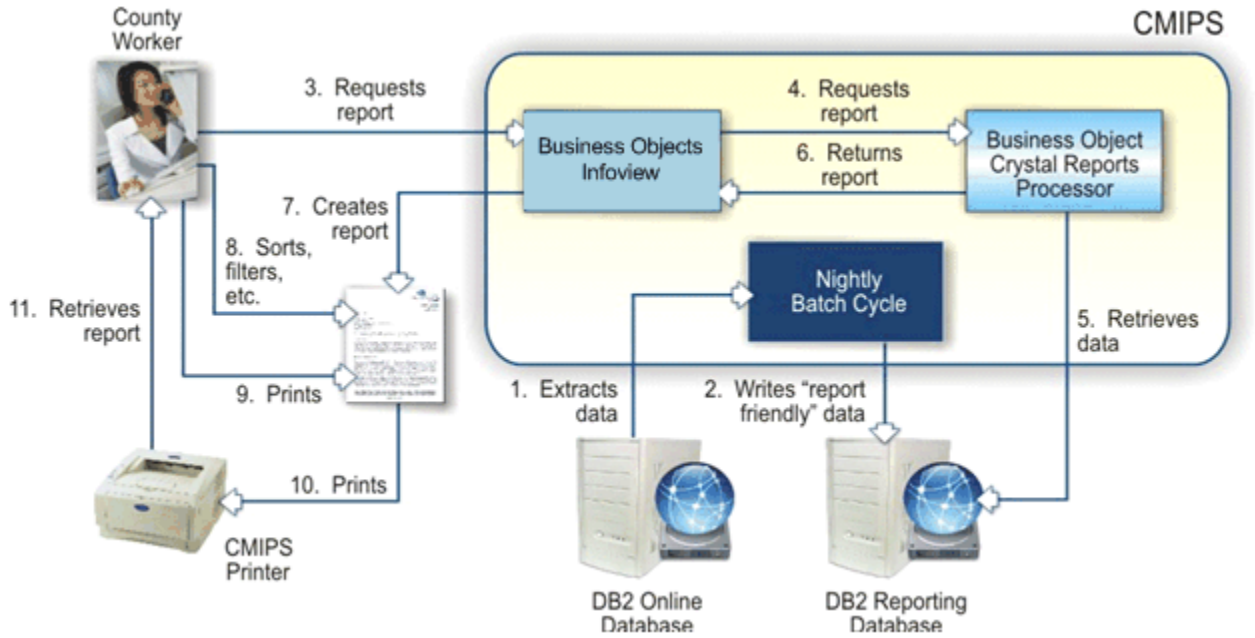


Figure – On-Demand Reports

The above figure shows the flow of information from the Operational Database via an ETL extraction of data into an internal interface file format. This internal interface file is transferred to and imported into a DB2 Replica database housed on the Reporting database server. At any time during the online availability window (by definition after all the internal interface batch jobs are completed), the end-user can generate a report. The report distribution will be to an individual BusinessObjects account, to a CMIPS printer, or to a local printer. These reports are then available for viewing, downloading, or other operations allowed by BusinessObjects and defined in the report construction.

Process/Screen Flow – On-Demand Requests

CMIPS users may request any available online report, that they are authorized to produce, by navigating to the "Available Reports" page, as shown in the following figure.
Sample Reports Selection Screen:

Figure – BusinessObjects Available Reports List

The available reports list will be made accessible to authorized CMIPS users through the CMIPS Application. The Reporting subsystem will be available to any end-user who has been granted access to view, produce, or print reports. The list of available reports will be limited to the user or user role authorized to access those reports. The user may then select the desired report and request immediate report generation. The report request will be sent to the BusinessObjects/Crystal Reports. Crystal Reports will query the reporting database for the dynamic, case-specific data and will return the formatted report to the user's browser for viewing as shown in the sample "Assessment Due Report" in the following figure.

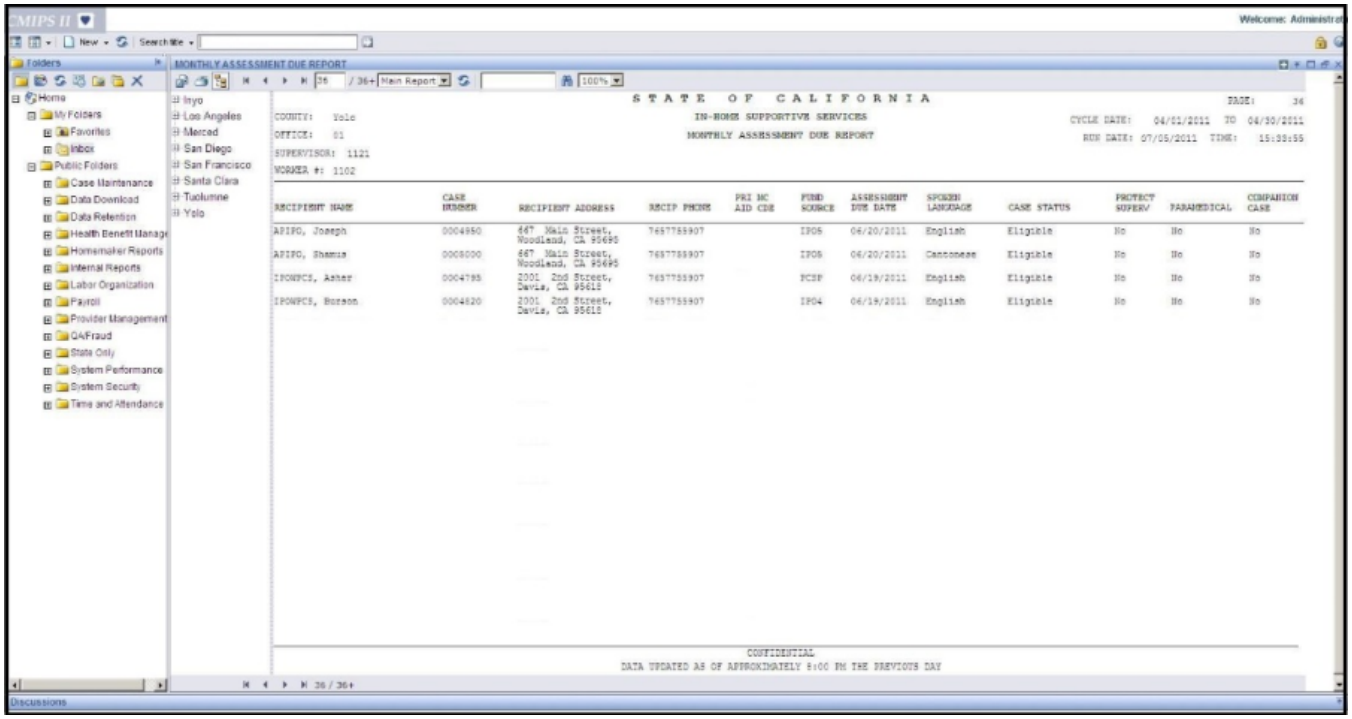


Figure – Case Management Assessment Due Report

If the report fails for any reason, the system will log an error message and notify the user of the failure via the History screen in user administration. The system will allow a user to cancel a report run before the end of the job via the Schedule screen. Crystal Reports will compress the report before transmitting it to the user's browser. The browser will decompress the output, minimizing the network bandwidth requirements.

DSD 13/Architecture - Reporting Architecture/Business Process - Reporting Overview/Business Process Function – BusinessObjects Batch

CI	Document Name
CI-116191 - DSD BF BusinessObjects Batch IMPLEMENTED	DSD_BF_BusinessObjects_Batch.doc

BusinessObjects/Crystal Reports will generate the online and batch reports. For batch requests, BusinessObjects/Crystal Reports queries the BusinessObjects Repository for a list of reports to be generated, loads the appropriate template, queries the CMIPS Reporting database for the dynamic data, merges the data with the template, and sends the created document to the county-located CMIPS printer.

Business Process Flow – Batch Requests

CI	Document Name
CI-116201 - DSD BP Batch Reports IMPLEMENTED	DSD_BP_Batch_Reports.doc

The following figure illustrates an overview of the process for generating reports in batch requests.

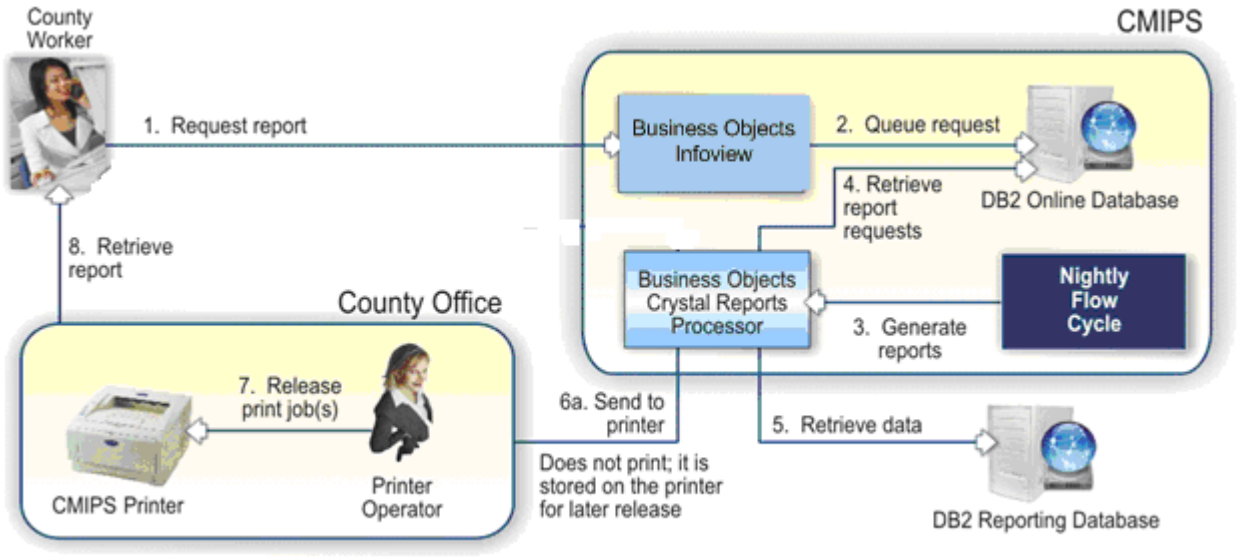


Figure – Batch Reports

The above figure shows the flow of information from a manual schedule of a report for batch job execution. After the internal interface batch jobs are completed then the nightly report generation batch job is started to create and distribute the standard reports. This is followed by the manually scheduled reports and distributed as defined when the batch job was scheduled.

Process/Screen Flow – Batch Requests

An authorized CMIPS user can request a report to be queued for batch generation by navigating to the list of reports that the user's role is authorized to view and selecting "Schedule" as shown above.

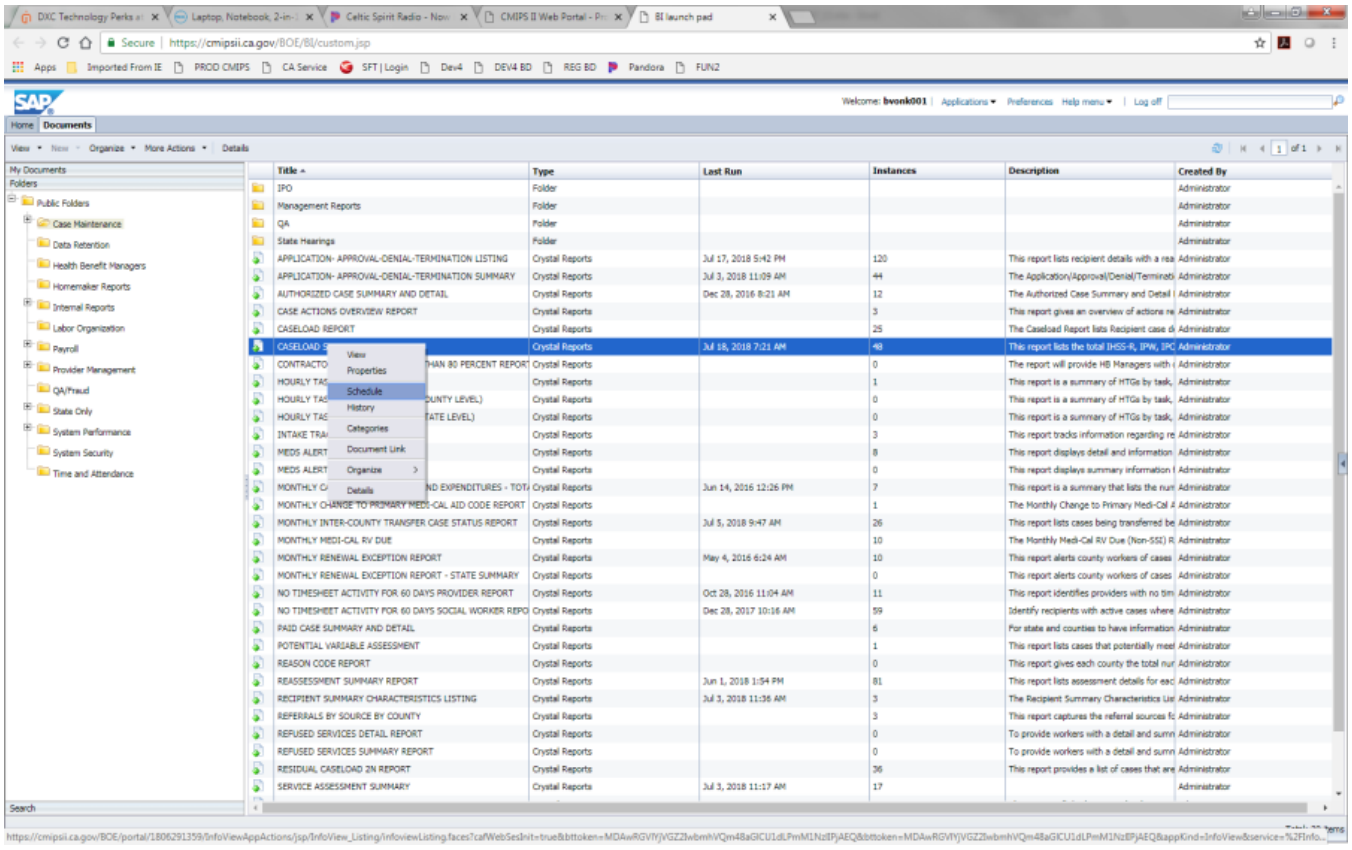


Figure – BusinessObjects Defined Reports List

The user then requests the frequency the report is to be run such as monthly. CMIPS administrators can define the days on which reports can be run through the Management console. After the administrator has defined the available run days on the calendar, users can schedule reports to run during any available day by selecting "Calendar."

When scheduling the job, the user can indicate alternate report generation formats such as Excel. The user can also specify that the report be routed to a specific printer. When the user has specified all desired options for the report batch request, the user will press the "Schedule" button to insert the schedule request in the BusinessObjects repository.

DSD 13/Architecture - Reporting Architecture/Business Process - Reporting Overview/Business Process Function – Reports under Public Folders

CI	Document Name
CI-116676 - DSD BF Reports Under Public Folders IMPLEMENTED	DSD_BF_Reports_Under_Public_Folders.doc

Any of the reports with specific parameters can be saved to public reports for other to use and or view as shown in the following figure. This function is restricted to those with the security permission to allow saving of reports to public folders. Any end-user could then use the report and see only data allowed by his/her respective security profile. The State user sees all of the State data and a county user sees only their respective county data.

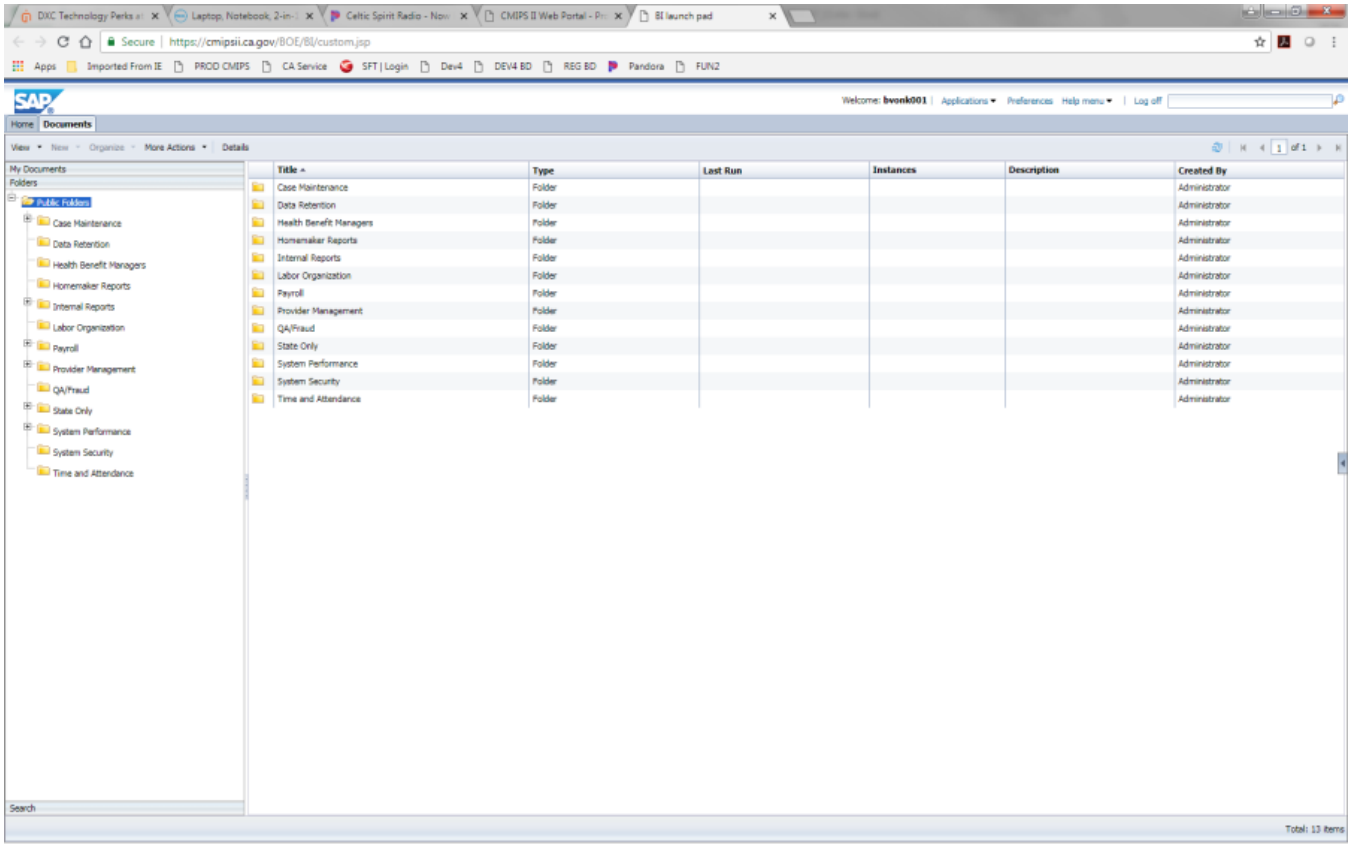


Figure – BusinessObjects Public Folder Reports List

All canned reports will be published in the Public Folder. From the Public Folder users can schedule and view reports (depending upon user rights).

The user and public reports allow for:

- Access of online reports through Infoview
- Flexible viewing and refreshing of reports online
- Refreshing the report with different data selection parameters
- Viewing and saving the online reports in different formats like PDF, Excel, Word, Comma Separated Values (CSV), and plain text

DSD 13/Architecture - Reporting Architecture/Business Process - Reporting Overview/Business Process Function – Scheduling a Report

CI	Document Name
CI-116677 - DSD BF Scheduling a Report IMPLEMENTED	DSD_BF_Scheduling_a_Report.doc

The user can schedule reports to run off hours to reduce the over demand on the system. The reports can be viewed later, sent to the printer or downloaded as required. This process is shown in the following figure, "BusinessObjects Report Schedule". The screen shown is the Prompts from which a user can set each Parameter individually or select the Edit Values action and set all values on a single screen.

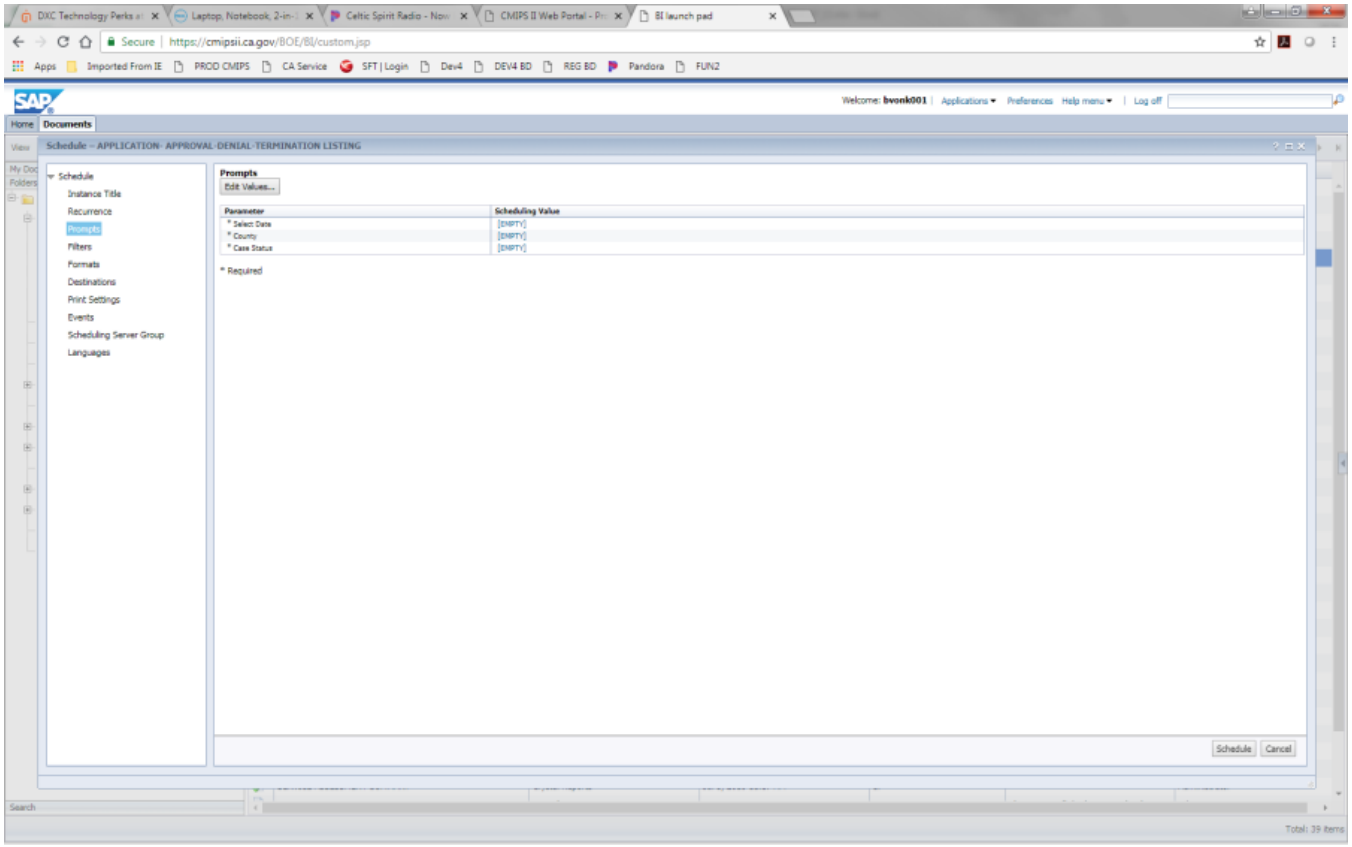


Figure – BusinessObjects Report Schedule

Depending upon which Schedule action is selected, the user may take various options. There is an option, "Recurrence" for example, which allows the user to generate a report "now" or any time and day in the future. Report generation includes the ability to set reoccurring report generation such as running the report every Monday morning at 5 a.m.

Scheduling capabilities allows automatic generation or "refreshing" of reports on a daily, weekly or monthly basis, or on other regular schedules that suit a particular business requirement. A report can be scheduled to run immediately, if desired. The refreshing of a scheduled report also leaves the report instance in history. Report instances in history are typically available for a longer period of time.

There are several advantages in using scheduled reports:

- Optimize database and network performance during prime time by shifting periodic reporting to off hours
- Ability to select the report format and/or selection criteria (parameters), so that viewers are not prompted for these values
- Reduce the time it takes to support a large group of reports users

Once the user has scheduled a report to be refreshed, they can see the status and history of each scheduled run. From within the InfoView available reports list, users can simply select the History icon. If the user wants to delete a particular report instance, they check the desired box and click on the Delete button.

The user has a variety of ways to export a report to a different file format for use with products such as Microsoft Word, Microsoft Excel, Acrobat Reader and others.