MCCF v1.0

Technical Manual

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Revision History

**NOTE:** The revision history cycle begins once changes or enhancements are requested after the document has been baselined.

| Date | Revision | Description | Author |
| --- | --- | --- | --- |
| 10/19/2017 | 1.0 | Initial document | Patrick Whalen |
| 11/7/2017 |  | Added interface information | Patrick Whalen |

A Technical Manual is a required end-user document for all OI&T software releases. The intended audience for this document is local IT support, management, and development personnel for nationally released software. It provides sufficient technical information about the software for developers and technical personnel to operate and maintain the software with only minimal assistance from Product Support staff.

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# Introduction

The Medical Care Collection Fund System (MCCF) automates and modernizes the five VA work streams: eBilling, ePharmacy, eInsurance, ePayments, and eAdmin.

## Purpose

This Technical Manual is designed to provide the developers and technical personnel with information necessary to install, maintain, and troubleshoot MCCF.

## System Overview

**WORK STREAM MODULES**

eBilling

* Claims Tracking, Encounter Form Utilities, and Insurance Data Capture.

ePharmacy

* Provides a method for managing the medications given to Veterans who have visited a clinic or who have received prescriptions upon discharge from the hospital
* Automatically generates prescription labels, and prints refill request forms
* Medication histories are kept online to permit checks for potential interactions
* Profiles can be generated to assist the clinician in managing the patient's medication regimen
* Management reports aid the pharmacy in controlling inventory and costs

eInusrance

* Determination of eligibility for claimed insurance (Verification)

ePayments

* Billing, Collections, Patient Account Profiling, EDI Lockbox

eAdmin

* Content Management

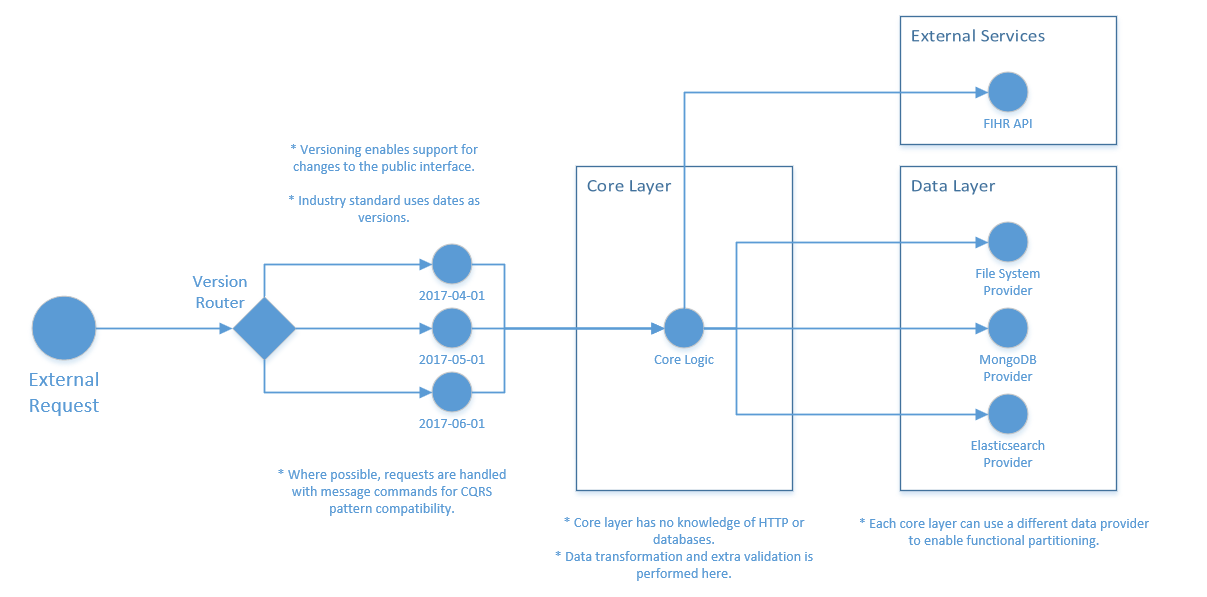
**ARCHITECTURE**

MCCF is a web-based system built on the Angular 2(Version 4) framework and Node,js. Angular is a TypeScript-based open-source front-end web application platform for building complex web applications. Node.js is a JavaScript run-time environment for executing JavaScript code server-side.

TAS backend services are driven by Node v6.

The following diagram lays out the general architecture of a service.

Figure



## Document Orientation

The MCCF Technical manual is intended for technical personnel, sofware developers and computer system managers. Technical personnel should be familiar with software delopment procedures, software development tools, and Unix operating system. Software developers should be familiar with Angular2, Node.js, JavaScript (ES6), TypeScript, CSS, and HTML.

The MCCF Technical Manual is divided into major sections for general clarity and simplification of the material being presented.The Implementation and Maintenance Section provides information on any aspect of the package that is site configurable.

### Disclaimers

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### References

# Implementation and Maintenance

For development MCCF requires the installation of Node.js and Angular2 client.

## System Requirements

CentOS Linux v7

### Hardware Requirements

n/a

### Software Requirements

Angular (version 4)

Node.js v6

MCCF requires a browser to run the application: Chrome v60, Internet Explorer v11.

### Database Requirements

Elasticsearch 5.x

## System Setup and Configuration

The client-side code for MCCF is written in Angular TypeScript. A native Angular Client program, which is installed on a software developer’s computer, installs the code with the command npm install. The code is then compiled into JavaScript and HTML bundles with the command npm build. These bundles are “served” by a web server to the browser user interface. A software developer can run the client-side application locally with the command npm start and entering localhost:4200 into the browser URL field.

The server-side code for MCCF is written in Node v6 ES6. The application is installed with a standard npm install command. Tests are performed with the mocha command. A software developer can run the application locally with the grunt commandaccessing port 8193.

# Files

The MCCF base code directory structure is inserted below:

Table 1: MCCF Base Code Directory Structure

/mccf\_tas\_core  
/src  
 /app  
 /assets  
 /environments  
 index.html  
 polyfills.ts  
 test.ts  
 tsconfig.spec.json  
 favicon.ico  
 main.ts  
 styles.css  
 tsconfig.app.json  
 typings.d.ts  
/scripts  
.angular-cli.json  
.bowerrc  
.jazzignore  
inventory  
protractor.conf.js  
tsconfig.json  
.jshintrc  
Jenkinsfile  
README.md  
tslint.json  
.travis.yml  
/karma  
requirements.yml  
Vagrantfile  
ansible.cfg  
karma.conf.js  
runFortifyScan.sh\*  
editorconfig  
bower.json  
LICENSE  
/.git  
devmachine.yml  
package.json  
site.yml  
.gitignore  
/e2e  
package-lock.json

DEVELOPMENT AND PRODUCTION ENVIRONMENT DIFFERENCES

When Angular code is compiled on a developer’s computer, supporting module libraries are downloaded from the NPM (Node Package Manager) public repository. In production, MCCF does not allow this because the system is behind a VA firewall. When MCCF is in production, Angular uses the Sinopia service for installing modules.

# Routines

n/a

# Exported Options

n/a

# Mail Groups, Alerts, and Bulletins

## Build Notifications

* Jenkins build success [email]
* Jenkins build failure [email]
* MCCF\_TAS deployment notification [email]

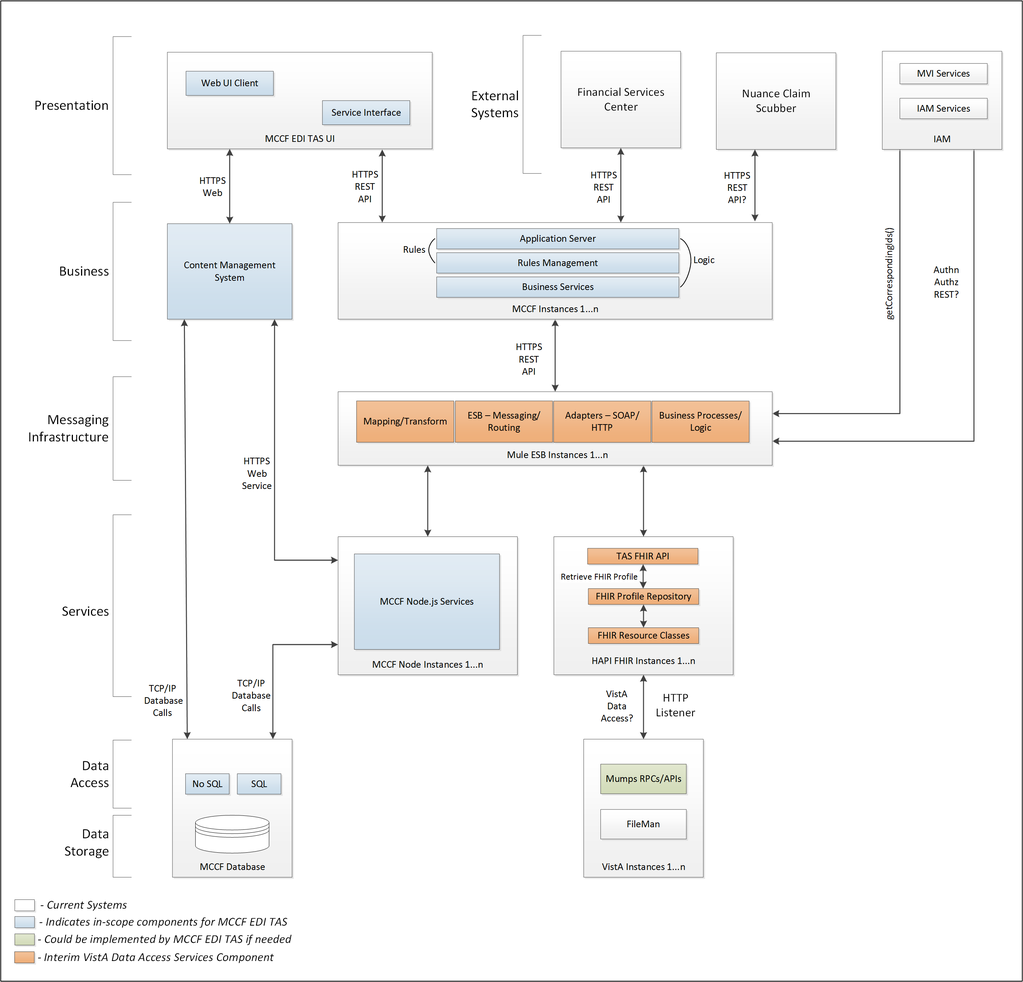
## Application Notifications

* [no email defined at this time]

# Public Interfaces

MCCF is a “reporting and controlling” application and interfaces with numerous data sources. These data sources include MCCF App Databases, FHIR, FSC, IAM, Mule, Vista, and the Scrubber. The following is a graphical representation of MCCF application interfaces.

Figure



## Integration Control Registrations

n/a

## Application Programming Interfaces

n/a

## Remote Procedure Calls

n/a

## HL7 Messaging

### HL7 version 2

* Originally created in 1989, the HL7 version 2 standard (also known as Pipehat) supports hospital workflows.
* HL7 v2.x messages use a non-XML encoding syntax based on segments (lines) and one-character delimiters.

### HL7 version 3

* The HL7 version 3 standard developed in 2005 also supports all healthcare workflows. The version 3 standard, unlike version 2, is based on a formal methodology and object-oriented principles.
* The HL7 version 3 messaging standard defines a series of Secure Text messages called interactions to support all healthcare workflows.
* HL7 v3 messages are based on an XML encoding syntax, as shown in this example:

1. <POLB\_IN224200 ITSVersion="XML\_1.0" xmlns="urn:hl7-org:v3" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"> <id root="2.16.840.1.113883.19.1122.7" extension="CNTRL-3456"/><creationTime value="200202150930-0400"/>

### FHIR is a standard and an API

* FHIR is the next generation healthcare messaging standard   
  created by HL7 and is designed to enable   
  exchange of health information through   
  RESTful services using HTTP.
* Data representation can be in JSON or XML. JSON and XML are the most standard formats for representing data.
* FHIR is built on previous HL7 standards   
  like HL7 2.x, 3.x, CDA etc.
* See <https://www.hl7.org/fhir/> for   
  more information

{

"resourceType": "Patient",

"id": "pat3",

"text": {

"status": "generated",

},

"identifier": [

{

"use": "usual",

"type": {

"coding": [

{

"system": "http://hl7.org/fhir/v2/0203",

"code": "MR"

}

]

},

"system": "urn:oid:0.1.2.3.4.5.6.7",

"value": "123457"

}

],

"active": true,

"name": [

{

"use": "official",

"family": [

"Notsowell"

],

"given": [

"Simon"

]

}

],

"gender": "male",

"birthDate": "1982-01-23",

"deceasedDateTime": "2015-02-14T13:42:00+10:00",

"managingOrganization": {

"reference": "Organization/1",

"display": "ACME Healthcare, Inc"

}

}

## Web Services

The MCCF application front-end uses Angular HTTP and WebSockets for communicating with data services. These are standard communication protocals for browser-based web applications.

# Standards and Conventions Exemptions

## Internal Relationships

n/a

## Software-wide Variables

n/a

# Security

## Security Menus and Options

n/a

## Security Keys and Roles

n/a

## File Security

n/a

## Electronic Signatures

n/a

## Secure Data Transmission

n/a

# Archiving

n/a

# Non-Standard Cross-References

n/a

# Troubleshooting

## Special Instructions for Error Correction

n/a

## National Service Desk and Organizational Contacts

n/a

# Acronyms and Abbreviations

MCCF – Medical Care Collection Fund

EDI – Electronic Data Interchange

TAS – Transaction Application Suite

NPM – Node Pacakge Manager

Template Revision History

| **D****ate** | **Version** | **Description** | **Author** |
| --- | --- | --- | --- |
| July 2016 | 1.1 | Updated instructional text to simplify content. | OI&T Documentation Standards Committee |
| June 2016 | 1.0 | Initial version | OI&T Documentation Standards Committee |