Department of Veterans Affairs

Medication Order Check Healthcare Application

(MOCHA)

Enhancements (Enh) OR 2

System Design Document (SDD)



**July 2015**

Version 5.0

Department of Veterans Affairs

Revision History

| Date | Version | Description | Author |
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| 09/14/2015 | 5.0 | Format/tech edit for ME2 OR2 Increment |  |
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| 05/15/2013 | 1.6 | Added CCR6124,6398,6396,6466 information |  |
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| 03/25/2013 | 1.1 | Added CCR6205 information |  |
| 03/18/2013 | 1.0 | Added CCR5828 information |  |

When to Complete Each Section of the SDD

| Section | Completed On or Before PMAS Phase | Rationale |
| --- | --- | --- |
| 1 – Introduction | MS 0 Review; updated thereafter | Conceptual design should inform evaluation of investments |
| 2 – Background | MS 0 Review; updated thereafter | Conceptual design should inform evaluation of investments |
| 3 – Conceptual Design | MS 0 Review; updated thereafter | Conceptual design should inform evaluation of investments |
| 4 – System Architecture | MS 0 Review; updated thereafter | Conceptual design should inform evaluation of investments |
| 5 – Data Design | MS 1 Review; updated thereafter | Design details should be elaborated upon during PMAS Planning phase and prior to development |
| 6 – Detailed Design | MS 1 Review; updated thereafter | Design details should be elaborated upon during PMAS Planning phase and prior to development |
| 7 – External System Interface Design | MS 1 Review; updated thereafter | Design details should be elaborated upon during PMAS Planning phase and prior to development |
| 8 – Human Machine Interfaces | MS 1 Review; updated thereafter | Design details should be elaborated upon during PMAS Planning phase and prior to development |
| Attachments | MS 1 Review; updated thereafter | Design details should be elaborated upon during PMAS Planning phase and prior to development |

A product’s system design should be defined conceptually prior to the allocation of personnel and resources that occur at project initiation. This gives the enterprise an opportunity to evaluate IT investments before project teams are stood up and funding is allocated. Sections 1- 4 which discuss the high level design should be completed prior to MS 0. All sections should be completed and updated before MS 1. Projects will need to address all SDD approval constraints prior to the MS 2 review. In addition, the SDD should reflect the as-built product going into the MS 2 review.

| Activity | New Capability (1) | Feature Enhancement (2) |
| --- | --- | --- |
| **Field Deployment (A)** | Yes | Yes |
| **Cloud/Web Deployment (B)** | Yes | Yes |
| **Mobile Application (C)** | Yes | Yes |

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# Introduction

This Software Design Document (SDD) will outline the changes to the software introduced by Patch PSJ\*5\*281, PSO\*7\*411, and PSS\*1\*175 delivered with Medication Order Check Healthcare Application (MOCHA) Enhancements (Enh) 2. MOCHA Enh 2 build will also include patches OR\*3\*269 and GMRA\*4\*46. Please refer to their respective SDD for further information regarding these patches.

## Scope

The scope of this SDD is PSJ\*5\*281, PSO\*7\*411, and PSS\*1\*175 delivered with MOCHA Enh 2. This SDD documents changes made to VistA M routines to support the requested functionality as documented in the MOCHA Enh 2 Requirements Specification Document (RSD).

## User Profiles

MOCHA Enh 2 is intended for the same audience as the previously release MOCHA functionality.

# Background

## Overview of the System

MOCHA V. 1.0 and V. 2.0 provides the implementation of all order checks demonstrated in the 2006 Pharmacy Enterprise Product Services Proof of Concept (PEPS POC) Demonstration. MOCHA will use services provided by First DataBank (FDB), the current drug database vendor. VistA enhancements include enhanced drug-drug interactions to provide more clinical information to the clinician; enhanced duplicate class to utilize FDB’s Enhanced Therapeutic Classification (ETC) system, which allows for multiple classes per drug; a new maximum single dose order check; a new daily dosage range check; and general dosing information and APIs to support the order check enhancements. Health*e*Vet (H*e*V) construction will include component(s) to utilize services provided by a commercial drug database to support Legacy VistA order check changes. The MOCHA application is written in the Massachusetts General Hospital Utility Multi-Programming System (MUMPS) programming language.

## Overview of the Business Process

The following functionality will be delivered with MOCHA Enh 2. Detailed requirements and subsequent acceptance criteria can be found on the PRE SharePoint site: (<http://vaww.yourserver.domain/projects/pre/PRE_Mocha_Latte/default.aspx>)

## Overview of the Significant Requirements

Refer to the ME2 Requirements Specifications Document (RSD):

<http://vaww.yourserver.domain/projects/pre/PRE_Mocha_Latte/Shared%20Documents/ME2_OR2%20Increment/Requirement/ME2_RSD_v3.doc> and the ME2 Business Requirements Document (BRD): <http://your_srver.domain.ext/warboard/anotebk.asp?proj=1686&Type=Active>

# Conceptual Design

This section of the SDD should provide details regarding the design and infrastructure used by the MOCHA application. This section is intended to illustrate the various environments, consumers and data providers used by the MOCHA application for ME2. While the infrastructure used to deploy MOCHA is outside of the scope of the PRE program, MOCHA deploys to individual VistA sites, the information is depicted in the following conceptual design sub sections.

## Conceptual Application Design

### Application Context



Figure 1: MOCHA Application Context Diagram

Table 5 details the components listed in the context diagram above. This includes the MOCHA application, as well as the MOCHA Server source system and CPRS, the consumer of MOCHA MUMPS APIs.

Table 5 (Grouping): Application Context Description

Object

| ID | Name | Description | Interface Name | Interface System |
| --- | --- | --- | --- | --- |
| HWSC | HealtheVet Web Service Client (HWSC) | MOCHA calls MOCHA Server through HWSC. HWSC uses Caché’s Web Services Client to invoke web service methods on external servers and retrieve results. It provides helper methods and classes to improve the use of the Web Service Client in a Health*e*Vet-VistA environment. |  | MOCHA Server |
| CPRS | **Computerized Patient Record System (CPRS)** | CPRS performs read only queries against existing MOCHA APIs to retrieve drug information. These MUMPS APIs are available through VistA. MOCHA does not call CPRS, CPRS is the dependent |  | MOCHA |

Interfaces External to OI&T

| ID | Name | Related Object | Input Messages | Output Messages | External Party |
| --- | --- | --- | --- | --- | --- |
| N/A | N/A | N/A | N/A | N/A | N/A |

Interfaces Internal to OI&T

| ID | Name | Related Object | Input Messages | Output Messages | External Party |
| --- | --- | --- | --- | --- | --- |
| MOCHA Server | MOCHA Server | MOCHA Server | Order Check Request | Order Check Request | N/A |

Externally Shared Data Stores

| ID | Name | Data Stored | Owner | Access |
| --- | --- | --- | --- | --- |
| N/A | N/A | N/A | N/A | N/A |

### High-Level Application Design

The High-Level Application Design identifies the major components of the application and the relationships of the major application components to each other and to the surrounding applications. From the top level, we see that MOCHA is a VistA MUMPS application that uses the MOCHA Server services to retrieve drug information such as dosing and drug interactions.

MOCHA Server is an independent utility that is used by MOCHA to retrieve pharmaceutical drug information. MOCHA Server is a read only ESTful web service over http and called by MOCHA through the HWSC.

MOCHA

Server

FDB

Database

CPRS

***Read only***

**Drug**

**Order**

**Check**

**Drug**

**Allergy**

**Check**

**Pharmacy**

**APIs**

**MOCHA**

**Application**

***Read only***

***Read only***

VistA

Allergy APIs

Figure 2: MOCHA High-Level Application Design

Table 6: Objects in the High Level Application Design

Objects / Components to be Built or Modified

| ID | Name | Description | Service or Legacy Code | External Interface Name | External Interface ID | Internal Interface Name | Internal Interface ID | SDP Sections 1&2 |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| MOCHA |  |  |  |  |  |  |  |  |

Internal Data Stores

| ID | Name | Data Stored | Steward | Access |
| --- | --- | --- | --- | --- |
| N/A |  |  |  |  |

### Application Locations

Table 7: Application Locations

| Application Component | Description | Location at Which Component is Run | Type |
| --- | --- | --- | --- |
| MOCHA 2 Enhancement (ME2) | MOCHA is deployed to individual sites and inherits availability from the individual VistA site hosting the MOCHA utility. | VistA site(s) with Pharmacy package installed | Fileman interface |

Table 8: Application Users

| Application Component | Location | User |
| --- | --- | --- |
| MOCHA 2 Enhancement (ME2) | VistA site(s) with Pharmacy package installed | A user must authenticate to a VistA site to use MOCHA. If you have the inpatient user role in VistA, you can access the MOCHA system. |

## Conceptual Data Design

### Project Conceptual Data Model

|  |
| --- |
| **CPRS**  **HDR**  **Pharmacy VistA**  **MOCHA** |

**Figure 3: Sample Project Conceptual Data Mode**

## Conceptual Infrastructure Design

The MOCHA application deploys to individual VistA sites and leverages the environment of the facility. MOCHA is installed as a VistA Pharmacy patch, available through FORUM, and relies on the particular site to install MOCHA and published dependencies.

### System Criticality and High Availability

In production, each VistA system is responsible for the operation and maintenance of their individual site. The MOCHA team is not responsible for the availability, reliability, or health of the VistA infrastructure. The MOCHA project does not have Service Level Agreements with the VistA sites.

### Special Technology

N/A

### Technology Locations

Table 13: Technology Location Details

| Technology Component  Production 1 | Location | Usage |
| --- | --- | --- |
| VistA System | Local Vista System/Server | Order Processing, Allergy order Checking |
| MOCHA Server | AITC and PITC | Drug order checking |

### Conceptual Infrastructure Diagram

#### Location of Environments and External Interfaces

MOCHA is part of the VistA Pharmacy package and is distributed to several installations across VA. Each one of those sites is assigned to a region at Service Delivery and Engineering (SDE) and configures their installation of MOCHA to point to a specific cluster where MOCHA Server is installed. That cluster is behind a load balancer that distributes network traffic to improve performance and reliability.

Figure 6 depicts the conceptual infrastructure for ME2 Production:

* Local networks from the individual VistA sites connect to their assigned Regional Server Cluster (RSC) through a global load balancer
* The ME2 application will be installed at each VistA site as part of the VistA Pharmacy patch
* There are no external connections to VA

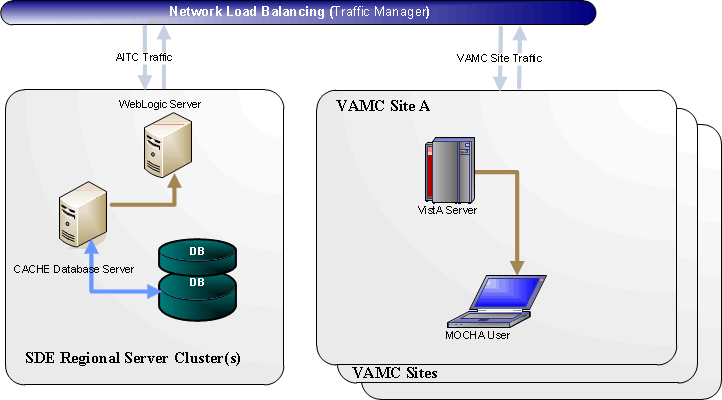


Figure 6: Conceptual Production Network and Environments

#### Conceptual Production String Diagram

The figure below demonstrates how information is exchanged in production. Station 501 Albuquerque represents the VistA site with MOCHA installed while MOCHA1 RSC has been used to show the installation of MOCHA Server.

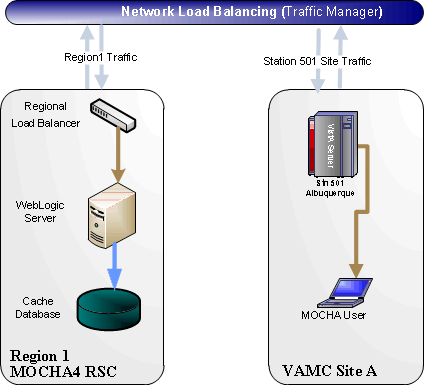


Figure 7: Conceptual Production String Diagram

# System Architecture

The VistA system components are deployed into pre-existing VistA systems, including production VistA systems housed in field data centers and field VA Medical Center (VAMC) computer rooms; field testing/training VistA systems similarly housed in field data centers and field VAMC computer rooms; and non-field test, development, and support VistA systems located at various VA-managed locations, including Office of Information (OI) Field Offices. No platform changes are required for any of these VistA systems to support PRE, and no changes to the VistA operational or support costs are required.

## Hardware Architecture

In production, each VistA system is responsible for the operation and maintenance of their individual site. These systems are outside of the scope of the ME2 project.

The PRE SQA and DEV environments are intentionally left out of this document. Funding for support and operations of these environments will be covered under an Interagency Agreement in the future.

## Software Architecture

Pharmacy code is written in the M programming language using Cache tools. Pharmacy uses M APIs to communicate with Computerized Patient Record System (CPRS) and the Adverse Reaction Tracking application. Pharmacy retrieves data from the Health Data Repository (HDR) by invoking an API provided by CPRS.

Pharmacy uses HealtheVet Web Services Client (HWSC) to communicate with the Mocha Server. HWSC uses Caché’s Web Services Client to invoke web service methods on external servers and retrieve results.

## Network Architecture

The diagram below depicts the network topology, including load balancers and MOCHA Servers. The diagram does not depict the individual VistA sites where MOCHA deploys, but the sites are represented in Figure 7, Conceptual Production String Diagram, in section 3.3, above.



## Service Oriented Architecture / ESS

N/A

## Enterprise Architecture

The adherence to technical standards is the established means to provide for consistent enterprise architecture. ME2 is Technical Reference Model (TRM) compliant. The table below lists the technology used by ME2.

| **Technology** | **Description** | **Version** | **TRM Link** |
| --- | --- | --- | --- |
| Massachusetts General Hospital Utility Multi-Programming System (MUMPS) | MUMPS (Massachusetts General Hospital Utility Multi-Programming System) is a programming language created in the late 1960s, originally for use in the healthcare industry. It was designed for the production of multi-user database-driven applications. Secondary language features were included to help programmers make applications using minimal computing resources. MUMPS is available from few sources: GT.M and Intersystem`s Cache. | ISO/IEC 11756:1999 | [http://www.domain/TRM/StandardPage.asp?tid=6402&tab=2#](http://www.domain/TRM/StandardPage.asp?tid=6402&tab=2) |

Data Design

## DBMS Files

No new Data Dictionary elements were exported by any of the ME2 Pharmacy patches. Only the CPRS patch (OR\*3.0\*269) made file modifications, and those were to the ORDER CHECK INSTANCES (#100.05) File.

## Non-DBMS Files

N/A

## Data View

|  |
| --- |
| **HDR**  **CPRS**    **Pharmacy VistA**    **MOCHA** |

# Detailed Design

The Roles and Responsibilities Matrix can be found in the ME2 RTM 201508: <http://vaww.yourserver.domain/projects/pre/PRE_Mocha_Latte/Shared%20Documents/UFT2%20Increment/Test/ME2/documentation/2015-08%20Documentation%20Deliverables/ME2_RTM_201508.xls>

## Hardware Detailed Design

N/A

## Software Detailed Design

### Conceptual Design

ME2 will be developed and final builds, the built KID files, are checked into the PRE change management. The build artifact can then be distributed to the multiple VistA sites where it will be install by the individual site as a VistA patch.

#### Product Perspective

Please refer to section 3.1.1 for the block component diagram in section 2.3 of the current RSD, which can be found here: <http://vaww.yourserver.domain/projects/pre/PRE_Mocha_Latte/Shared%20Documents/Forms/AllItems.aspx?RootFolder=%2Fprojects%2Fpre%2FPRE%5FMocha%5FLatte%2FShared%20Documents%2FME2%5FOR2%20Increment%2FRequirement>

##### User Interfaces

The software product will conform to the existing VistA conventions. Reports, menus, options, and screen formats will conform to the existing VistA conventions. Report formats and option process steps, such as “roll & scroll,” will be fielded and tested for usability by test site personnel, as well as user representatives and subject matter experts.

##### Hardware Interfaces

This product shall run on standard hardware platforms that VHA facilities use.

These enhancements are compatible with existing hardware. No hardware issues are involved with these enhancements.

##### Software Interfaces

The Pharmacy project will use existing interfaces via APIs to and from CPRS. These API’s will allow for:

* CPRS to request and receive order checks for Provider entry of medication orders.
* Inpatient Medication and Outpatient Pharmacy VistA packages to request and receive remote order data from the Health Data Repository (HDR) via CPRS.

The Pharmacy project will use an interface via API to and from the Adverse Reaction Tracking application. This API will allow for:

* Pharmacy to request and receive Allery/Adverse reaction order check information.

The Pharmacy project will interface via API to HWSC to request order check data from FDB’s MedKnowledge Framework (formerly Drug Information Framework) database.

##### Communications Interfaces

N/A

##### Memory Constraints

N/A

##### Special Operations

N/A

#### Product Features

Product Features can be found in the Medication Order Check Healthcare Application (MOCHA) Enhancements 2 OR2 Increment Requirements Specification Document, August 2015, Version 3.0:

<http://vaww.yourserver.domain/projects/pre/PRE_Mocha_Latte/Shared%20Documents/Forms/AllItems.aspx?RootFolder=%2Fprojects%2Fpre%2FPRE%5FMocha%5FLatte%2FShared%20Documents%2FME2%5FOR2%20Increment%2FRequirement>

#### User Characteristics

The intended users of this enhancement are providers, pharmacists, pharmacy technicians, and nurses.

#### Dependencies and Constraints

Dependencies:

* CPRS must provide consistency of patient drug orders and drug information with Pharmacy applications.
* Access to vital name and vital measurement data via Vitals APIs.
* COTS Drug Information Vendor(s) - Drug information and associated decision support tools to be used across the Pharmacy enterprise must be available.
* Encapsulation of VistA functionality that must be supported by reengineered Pharmacy application.
* Adverse Reaction tracking must provide allergy/Adverse reaction order check results to Pharmacy.
* The Health Data Repository (HDR) must be accessible so order checks against remote data can occur.

Constraints:

The coordination of application releases among various VistA applications.

### Specific Requirements

#### Database Repository

N/A

#### System Features

The following functionality will be delivered with MOCHA Enh 2. Detailed requirements and subsequent acceptance criteria can be found on the PRE SharePoint site:

<http://vaww.yourserver.domain/projects/pre/PRE_Mocha_Latte/Shared%20Documents/Forms/AllItems.aspx?RootFolder=%2Fprojects%2Fpre%2FPRE%5FMocha%5FLatte%2FShared%20Documents%2FME2%5FOR2%20Increment%2FRequirement>

##### Rational Tools Clear Quest Repository Record Number:

###### CR3286 - Add functionality to use Clinical Reminder based order checks in pharmacy order entry (Clinical Reminder Order Checks - CROC)

| Routines | Activities | | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Routine Name** | PSOCROC | | | | | | | | |
| **Enhancement Category** | New | | Modify | Delete | | | No Change | | |
| **RTM** | CR3286 | | | | | | | | |
| **Related Options** |  | | | | | | | | |
| Related Routines | Routines “Called By” | | | | | Routines “Called” | | | |
|  |  | | | | |  | | | |
| **Data Dictionary (DD) References** |  | | | | | | | | |
| **Related Protocols** |  | | | | | | | | |
| **Related Integration Control Registrations (ICRs)** |  | | | | | | | | |
| **Data Passing** | Input | Output Reference | | | Both | | | Global Reference | Local |
| **Input Attribute Name and Definition** | Name:  Definition: | | | | | | | | |
| **Output Attribute Name and Definition** | Name:  Definition: | | | | | | | | |
| Current Logic | | | | | | | | | |
| N/A | | | | | | | | | |
| Modified Logic (Changes are in bold) | | | | | | | | | |
| |  | | --- | | Add to the backdoor pharmacy order entry process functionality to  evaluate the orderable item for a specific patient using the Clinical Reminder Order Check (CROC) API. (Outpatient Pharmacy) | | | | | | | | | | |

| Routines | Activities | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Routine Name** | PSJCROC | | | | | | |
| **Enhancement Category** | New | Modify | Delete | | No Change | | |
| **RTM** | CR3286 | | | | | | |
| **Related Options** |  | | | | | | |
| Related Routines | Routines “Called By” | | | Routines “Called” | | | |
|  |  | | |  | | | |
| **Data Dictionary (DD) References** |  | | | | | | |
| **Related Protocols** |  | | | | | | |
| **Related Integration Control Registrations (ICRs)** |  | | | | | | |
| **Data Passing** | Input | Output Reference | | Both | | Global Reference | Local |
| **Input Attribute Name and Definition** | Name:  Definition: | | | | | | |
| **Output Attribute Name and Definition** | Name:  Definition: | | | | | | |
| Current Logic | | | | | | | |
| N/A | | | | | | | |
| Modified Logic (Changes are in bold) | | | | | | | |
| |  | | --- | | Add to the backdoor pharmacy order entry process functionality to  evaluate the orderable item for a specific patient using the Clinical Reminder Order Check (CROC) API. (Inpatient Medications) | | | | | | | | |

###### CR5377 - Order Checks against a Patient’s Active Medication Profile - add order status to order check messages

| Routines | Activities | | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Routine Name** | PSJOCDI | | | | | | | | |
| **Enhancement Category** | New | | Modify | Delete | | | No Change | | |
| **RTM** | CR 5377 (CCR5980) | | | | | | | | |
| **Related Options** |  | | | | | | | | |
| Related Routines | Routines “Called By” | | | | | Routines “Called” | | | |
|  |  | | | | |  | | | |
| **Data Dictionary (DD) References** |  | | | | | | | | |
| **Related Protocols** |  | | | | | | | | |
| **Related Integration Control Registrations (ICRs)** |  | | | | | | | | |
| **Data Passing** | Input | Output Reference | | | Both | | | Global Reference | Local |
| **Input Attribute Name and Definition** | Name:  Definition: | | | | | | | | |
| **Output Attribute Name and Definition** | Name:  Definition: | | | | | | | | |
| Current Logic | | | | | | | | | |
| The Order Status is not being displayed. | | | | | | | | | |
| Modified Logic (Changes are in bold) | | | | | | | | | |
| The Order Status will be displayed with all orders in the Order Check messages when displayed using the CK option in Inpatient Pharmacy. | | | | | | | | | |

###### CR2831 - Provide MOCHA 1 CPRS Order Checks on IP Unit Dose Orders when editing the Orderable Item dosage

| Routines | Activities | | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Routine Name** | PSGOEE | | | | | | | | |
| **Enhancement Category** | New | | Modify | Delete | | | No Change | | |
| **RTM** | CR 2831 (CCR2987) | | | | | | | | |
| **Related Options** |  | | | | | | | | |
| Related Routines | Routines “Called By” | | | | | Routines “Called” | | | |
|  |  | | | | |  | | | |
| **Data Dictionary (DD) References** |  | | | | | | | | |
| **Related Protocols** |  | | | | | | | | |
| **Related Integration Control Registrations (ICRs)** |  | | | | | | | | |
| **Data Passing** | Input | Output Reference | | | Both | | | Global Reference | Local |
| **Input Attribute Name and Definition** | Name:  Definition: | | | | | | | | |
| **Output Attribute Name and Definition** | Name:  Definition: | | | | | | | | |
| Current Logic | | | | | | | | | |
| The aminoglycoside order check didn’t perform when edit the Dosage Order field. | | | | | | | | | |
| Modified Logic (Changes are in bold) | | | | | | | | | |
| Trigger the aminoglycoside order check when edit the Dosage Order field. | | | | | | | | | |

##### Allergy Functionality

###### CR5297 - Adding Severity = Severe Intervention functionality to Allergy Sign/Symptoms Display

| Routines | Activities | | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Routine Name** | PSODGAL1 | | | | | | | | |
| **Enhancement Category** | New | | Modify | Delete | | | No Change | | |
| **RTM** | CR5297 | | | | | | | | |
| **Related Options** |  | | | | | | | | |
| Related Routines | Routines “Called By” | | | | | Routines “Called” | | | |
|  |  | | | | |  | | | |
| **Data Dictionary (DD) References** |  | | | | | | | | |
| **Related Protocols** |  | | | | | | | | |
| **Related Integration Control Registrations (ICRs)** |  | | | | | | | | |
| **Data Passing** | Input | Output Reference | | | Both | | | Global Reference | Local |
| **Input Attribute Name and Definition** | Name:  Definition: | | | | | | | | |
| **Output Attribute Name and Definition** | Name:  Definition: | | | | | | | | |
| Current Logic | | | | | | | | | |
| When API returns ‘Severe’, the user is not prompted to enter an intervention. | | | | | | | | | |
| Modified Logic (Changes are in bold) | | | | | | | | | |
| Add Intervention functionality when the API Severity returns 'Severe' then it should work the same as Critical Drug-Drug interactions and force the pharmacist to log an intervention prior to proceeding. | | | | | | | | | |

###### CR5422 - Add sign/symptoms to Allergy/ADR order check display (Remote HDR)

| Routines | Activities | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Routine Name** | PSODGAL1 | | | | | | | |
| **Enhancement Category** | New | Modify | | Delete | | No Change | | |
| **RTM** |  | | | | | | | |
| **Related Options** |  | | | | | | | |
| Related Routines | Routines “Called By” | | | | | Routines “Called” | | |
|  |  | | | | |  | | |
| **Data Dictionary (DD) References** |  | | | | | | | |
| **Related Protocols** |  | | | | | | | |
| **Related Integration Control Registrations (ICRs)** |  | | | | | | | |
| **Data Passing** | Input | | Output Reference | | Both | | Global Reference | Local |
| **Input Attribute Name and Definition** | Name:  Definition: | | | | | | | |
| **Output Attribute Name and Definition** | Name:  Definition: | | | | | | | |
| Current Logic | | | | | | | | |
| The Remote HDR Allergy Signs/Symptoms are not displayed. | | | | | | | | |
| Modified Logic (Changes are in bold) | | | | | | | | |
| Include sign/symptoms to the Allergy/ADR (remote & local) order check displays | | | | | | | | |

###### CR6268 - Replace Local or Remote verbiage with Actual Station Name and sort message sets by SEVERITY

| Routines | Activities | | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Routine Name** | PSODGAL1, PSODGAL2 | | | | | | | | |
| **Enhancement Category** | New | | Modify | Delete | | | No Change | | |
| **RTM** |  | | | | | | | | |
| **Related Options** |  | | | | | | | | |
| Related Routines | Routines “Called By” | | | | | Routines “Called” | | | |
|  |  | | | | |  | | | |
| **Data Dictionary (DD) References** |  | | | | | | | | |
| **Related Protocols** |  | | | | | | | | |
| **Related Integration Control Registrations (ICRs)** |  | | | | | | | | |
| **Data Passing** | Input | Output Reference | | | Both | | | Global Reference | Local |
| **Input Attribute Name and Definition** | Name:  Definition: | | | | | | | | |
| **Output Attribute Name and Definition** | Name:  Definition: | | | | | | | | |
| Current Logic | | | | | | | | | |
| Currently only the words ‘Remote’ or ‘Local’ display in the adverse reaction order check message. | | | | | | | | | |
| Modified Logic (Changes are in bold) | | | | | | | | | |
| Change the allergy order check by replacing the ([LOCAL or REMOTE)] section in the adverse reaction order check message with ([STATION NAME]), where STATION NAME is the name of the station where the documentation resides and including the date the reaction was entered. | | | | | | | | | |

##### Patient Safety Issues:

###### CR6668/CCR6641 (CPRS Defect requiring changes to Pharmacy Backdoor) - Incorrect causative agent given in order/allergy check

This Defect requires changes to the CPRS Allergy package API that requires subsequent modifications to Back Door Pharmacy

| Routines | Activities | | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Routine Name** | PSODGAL1, PSODGAL3 | | | | | | | | |
| **Enhancement Category** | New | | Modify | Delete | | | No Change | | |
| **RTM** | CR6668/CCR6641 | | | | | | | | |
| **Related Options** |  | | | | | | | | |
| Related Routines | Routines “Called By” | | | | | Routines “Called” | | | |
|  |  | | | | |  | | | |
| **Data Dictionary (DD) References** |  | | | | | | | | |
| **Related Protocols** |  | | | | | | | | |
| **Related Integration Control Registrations (ICRs)** |  | | | | | | | | |
| **Data Passing** | Input | Output Reference | | | Both | | | Global Reference | Local |
| **Input Attribute Name and Definition** | Name:  Definition: | | | | | | | | |
| **Output Attribute Name and Definition** | Name:  Definition: | | | | | | | | |
| Current Logic | | | | | | | | | |
|  | | | | | | | | | |
| Modified Logic (Changes are in bold) | | | | | | | | | |
|  | | | | | | | | | |

###### CR6662/CCR6747 - Potential Patient Safety Issue - Allergy: Multiple Reactions with Same Drug Class or Drug Ingredient

| Routines | Activities | | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Routine Name** | PSODGAL1 ,PSODGAL3 | | | | | | | | |
| **Enhancement Category** | New | | Modify | Delete | | | No Change | | |
| **RTM** | CR6662/CCR6747 | | | | | | | | |
| **Related Options** |  | | | | | | | | |
| Related Routines | Routines “Called By” | | | | | Routines “Called” | | | |
|  |  | | | | |  | | | |
| **Data Dictionary (DD) References** |  | | | | | | | | |
| **Related Protocols** |  | | | | | | | | |
| **Related Integration Control Registrations (ICRs)** |  | | | | | | | | |
| **Data Passing** | Input | Output Reference | | | Both | | | Global Reference | Local |
| **Input Attribute Name and Definition** | Name:  Definition: | | | | | | | | |
| **Output Attribute Name and Definition** | Name:  Definition: | | | | | | | | |
| Current Logic | | | | | | | | | |
|  | | | | | | | | | |
| Modified Logic (Changes are in bold) | | | | | | | | | |
|  | | | | | | | | | |

###### CCR6960 (PSPO 2561) - PATIENT SAFETY ISSUE OP - Drug interaction not displaying for remote order in a certain scenario shown in the description

| Routines | Activities | | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Routine Name** | PSODGAL1, PSODGAL3 | | | | | | | | |
| **Enhancement Category** | New | | Modify | Delete | | | No Change | | |
| **RTM** | CCR6960 (PSPO 2561) | | | | | | | | |
| **Related Options** |  | | | | | | | | |
| Related Routines | Routines “Called By” | | | | | Routines “Called” | | | |
|  |  | | | | |  | | | |
| **Data Dictionary (DD) References** |  | | | | | | | | |
| **Related Protocols** |  | | | | | | | | |
| **Related Integration Control Registrations (ICRs)** |  | | | | | | | | |
| **Data Passing** | Input | Output Reference | | | Both | | | Global Reference | Local |
| **Input Attribute Name and Definition** | Name:  Definition: | | | | | | | | |
| **Output Attribute Name and Definition** | Name:  Definition: | | | | | | | | |
| Current Logic | | | | | | | | | |
|  | | | | | | | | | |
| Modified Logic (Changes are in bold) | | | | | | | | | |
|  | | | | | | | | | |

###### CR6668/CCR6641 - CHEYL37 - Incorrect causative agent given in order/allergy check

| Routines | Activities | | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Routine Name** | PSODGAL1, PSODGAL3 | | | | | | | | |
| **Enhancement Category** | New | | Modify | Delete | | | No Change | | |
| **RTM** | CR6668/CCR6641 | | | | | | | | |
| **Related Options** |  | | | | | | | | |
| Related Routines | Routines “Called By” | | | | | Routines “Called” | | | |
|  |  | | | | |  | | | |
| **Data Dictionary (DD) References** |  | | | | | | | | |
| **Related Protocols** |  | | | | | | | | |
| **Related Integration Control Registrations (ICRs)** |  | | | | | | | | |
| **Data Passing** | Input | Output Reference | | | Both | | | Global Reference | Local |
| **Input Attribute Name and Definition** | Name:  Definition: | | | | | | | | |
| **Output Attribute Name and Definition** | Name:  Definition: | | | | | | | | |
| Current Logic | | | | | | | | | |
|  | | | | | | | | | |
| Modified Logic (Changes are in bold) | | | | | | | | | |
|  | | | | | | | | | |

##### Remedy Tickets:

###### Remedy Ticket 933381 - Incorrect allergy/drug order checks reported by the site

| Routines | Activities | | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Routine Name** | PSODGAL1 | | | | | | | | |
| **Enhancement Category** | New | | Modify | Delete | | | No Change | | |
| **RTM** | Remedy Ticket 933381 (CCR 6963) | | | | | | | | |
| **Related Options** |  | | | | | | | | |
| Related Routines | Routines “Called By” | | | | | Routines “Called” | | | |
|  |  | | | | |  | | | |
| **Data Dictionary (DD) References** |  | | | | | | | | |
| **Related Protocols** |  | | | | | | | | |
| **Related Integration Control Registrations (ICRs)** |  | | | | | | | | |
| **Data Passing** | Input | Output Reference | | | Both | | | Global Reference | Local |
| **Input Attribute Name and Definition** | Name:  Definition: | | | | | | | | |
| **Output Attribute Name and Definition** | Name:  Definition: | | | | | | | | |
| Current Logic | | | | | | | | | |
| SYM+29^PSODGAL1 - Incorrectly compared the IEN from VA GENERIC file (#50.6) to IEN from VA PRODUCT file (#50.68) | | | | | | | | | |
| Modified Logic (Changes are in bold) | | | | | | | | | |
| Using API ORCHK2^GMRAOR correct this problem. | | | | | | | | | |

###### Remedy Ticket 960690 & 960714 - Remote ADR allergies missing allergy order check

| Routines | Activities | | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Routine Name** | PSODGAL1 | | | | | | | | |
| **Enhancement Category** | New | | Modify | Delete | | | No Change | | |
| **RTM** | Remedy Ticket 960690 & 960714 (CCR 6962) | | | | | | | | |
| **Related Options** |  | | | | | | | | |
| Related Routines | Routines “Called By” | | | | | Routines “Called” | | | |
|  |  | | | | |  | | | |
| **Data Dictionary (DD) References** |  | | | | | | | | |
| **Related Protocols** |  | | | | | | | | |
| **Related Integration Control Registrations (ICRs)** |  | | | | | | | | |
| **Data Passing** | Input | Output Reference | | | Both | | | Global Reference | Local |
| **Input Attribute Name and Definition** | Name:  Definition: | | | | | | | | |
| **Output Attribute Name and Definition** | Name:  Definition: | | | | | | | | |
| Current Logic | | | | | | | | | |
| The remote allergy was not performed. | | | | | | | | | |
| Modified Logic (Changes are in bold) | | | | | | | | | |
| PSODGAL1 was modified and fixed the remote allergy issue. | | | | | | | | | |

###### Remedy Ticket 589406 - When entering an IV order for an IMO patient at a clinic, if that patient has an appointment scheduled at an IMO clinic, then exiting out of the order and viewing the Patient Information can cause an UNDEFINED error.

| Routines | Activities | | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Routine Name** | PSJLMUTL | | | | | | | | |
| **Enhancement Category** | New | | Modify | Delete | | | No Change | | |
| **RTM** | Remedy Ticket 589406 | | | | | | | | |
| **Related Options** |  | | | | | | | | |
| Related Routines | Routines “Called By” | | | | | Routines “Called” | | | |
|  |  | | | | |  | | | |
| **Data Dictionary (DD) References** |  | | | | | | | | |
| **Related Protocols** |  | | | | | | | | |
| **Related Integration Control Registrations (ICRs)** |  | | | | | | | | |
| **Data Passing** | Input | Output Reference | | | Both | | | Global Reference | Local |
| **Input Attribute Name and Definition** | Name:  Definition: | | | | | | | | |
| **Output Attribute Name and Definition** | Name:  Definition: | | | | | | | | |
| Current Logic | | | | | | | | | |
| At the beginning of the ENC Line Tag, the PSGDT variable is now reset if it is not defined. | | | | | | | | | |
| Modified Logic (Changes are in bold) | | | | | | | | | |
|  | | | | | | | | | |

##### Dosing Defects:

###### CCR6425 - Dosing warning displayed twice when verifying an order with edit

| Routines | Activities | | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Routine Name** | PSJOE | | | | | | | | |
| **Enhancement Category** | New | | Modify | Delete | | | No Change | | |
| **RTM** | CCR 6425 | | | | | | | | |
| **Related Options** |  | | | | | | | | |
| Related Routines | Routines “Called By” | | | | | Routines “Called” | | | |
|  |  | | | | |  | | | |
| **Data Dictionary (DD) References** |  | | | | | | | | |
| **Related Protocols** |  | | | | | | | | |
| **Related Integration Control Registrations (ICRs)** |  | | | | | | | | |
| **Data Passing** | Input | Output Reference | | | Both | | | Global Reference | Local |
| **Input Attribute Name and Definition** | Name:  Definition: | | | | | | | | |
| **Output Attribute Name and Definition** | Name:  Definition: | | | | | | | | |
| Current Logic | | | | | | | | | |
| Dosing warning displayed twice when verifying an order with edit | | | | | | | | | |
| Modified Logic (Changes are in bold) | | | | | | | | | |
| Added PSJDSVFY and PSJENHOC variables to flag when DI, DT or dosing have been displayed. | | | | | | | | | |

###### CCR6596 - Edited Med Route on a Non-Verified IV Fluid order is not updated in CPRS

| Routines | Activities | | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Routine Name** | PSIVORC2 | | | | | | | | |
| **Enhancement Category** | New | | Modify | Delete | | | No Change | | |
| **RTM** | CCR 6596 | | | | | | | | |
| **Related Options** |  | | | | | | | | |
| Related Routines | Routines “Called By” | | | | | Routines “Called” | | | |
|  |  | | | | |  | | | |
| **Data Dictionary (DD) References** |  | | | | | | | | |
| **Related Protocols** |  | | | | | | | | |
| **Related Integration Control Registrations (ICRs)** |  | | | | | | | | |
| **Data Passing** | Input | Output Reference | | | Both | | | Global Reference | Local |
| **Input Attribute Name and Definition** | Name:  Definition: | | | | | | | | |
| **Output Attribute Name and Definition** | Name:  Definition: | | | | | | | | |
| Current Logic | | | | | | | | | |
| |  | | --- | | Edited the Med Route for a Non-Verified order didn’t update CPRS. | | | | | | | | | | |
| Modified Logic (Changes are in bold) | | | | | | | | | |
| This change will ensure CPRS gets updated when editing the Med Route for a Non-Verified IV Fluids order. | | | | | | | | | |

##### Misc.:

###### CR6812 - Service Correction inserting DRUG NAME or STRENGTH/DOSE UNIT into OR GTX DOSE INSTRUCTIONS for Unit Dose FREE TEXT CPRS Order

| Routines | Activities | | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Routine Name** | PSJHL3 | | | | | | | | |
| **Enhancement Category** | New | | Modify | Delete | | | No Change | | |
| **RTM** | CR 6812 (CCR6958) | | | | | | | | |
| **Related Options** |  | | | | | | | | |
| Related Routines | Routines “Called By” | | | | | Routines “Called” | | | |
|  |  | | | | |  | | | |
| **Data Dictionary (DD) References** |  | | | | | | | | |
| **Related Protocols** |  | | | | | | | | |
| **Related Integration Control Registrations (ICRs)** |  | | | | | | | | |
| **Data Passing** | Input | Output Reference | | | Both | | | Global Reference | Local |
| **Input Attribute Name and Definition** | Name:  Definition: | | | | | | | | |
| **Output Attribute Name and Definition** | Name:  Definition: | | | | | | | | |
| Current Logic | | | | | | | | | |
| Incorrect format was sent from IP to CPRS when using a free text dosage in a UD order. | | | | | | | | | |
| Modified Logic (Changes are in bold) | | | | | | | | | |
| Modified ^PSJHL3 to send the expected format. | | | | | | | | | |

###### CR6938 - INPATIENT - Active Outpatient to Inpatient order (free text dose displayed) - "&" passed to CPRS

| Routines | Activities | | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Routine Name** | PSJHL3 | | | | | | | | |
| **Enhancement Category** | New | | Modify | Delete | | | No Change | | |
| **RTM** | CR6938 (CCR 6952) | | | | | | | | |
| **Related Options** |  | | | | | | | | |
| Related Routines | Routines “Called By” | | | | | Routines “Called” | | | |
|  |  | | | | |  | | | |
| **Data Dictionary (DD) References** |  | | | | | | | | |
| **Related Protocols** |  | | | | | | | | |
| **Related Integration Control Registrations (ICRs)** |  | | | | | | | | |
| **Data Passing** | Input | Output Reference | | | Both | | | Global Reference | Local |
| **Input Attribute Name and Definition** | Name:  Definition: | | | | | | | | |
| **Output Attribute Name and Definition** | Name:  Definition: | | | | | | | | |
| Current Logic | | | | | | | | | |
| When transfer an outpatient prescription with a free text dosage to Inpatient, the ampersand “&” is included in the messaging to CPRS. | | | | | | | | | |
| Modified Logic (Changes are in bold) | | | | | | | | | |
| Modified the code to not send & when the Dosage Ordered is null. | | | | | | | | | |

##### All Misc. Routines and Protocol:

These are the routines being used by the combined build Medication Order Check Healthcare Application (MOCHA) Enhancements (Enh) 2 to support the functional requirements for patches PSJ\*5\*281, PSO\*7\*411, and PSS\*1\*175:

PSGOD

PSGOE7

PSGOEF

PSGOER

PSGOER0

PSGOERS

PSGOES

PSGOEV

PSIV

PSIVEDRG

PSIVEDT

PSIVOD

PSIVOPT1

PSIVORC1

PSIVORE

PSJBLDOC

PSJCOM

PSJCOM1

PSJCOMR

PSJCOMV

PSJDGAL2

PSJDGCK

PSJGMRA

PSJLIACT

PSJLMUT1

PSJMUTL

PSJNEWOA\*

PSJNEWOC\*

PSJOC

PSJOCDSD

PSJOCDT

PSJOCOR

PSJOE1

PSJOEA2

PSJRXI

PSOCAN2

PSODDPR2

PSODDPR5

PSODDPR7

PSODDPRE

PSODEM

PSODRG

PSONEW

PSONEWOA\*

PSONEWOC\*

PSOOCKV1\*

PSOORCPY

PSOOREDT

PSOORNE4

PSOORNEW

PSOORUT2

PSORENW

PSORENW0

PSORENW4

PSOUTL

PSOVER1

PSSCKOS\*

PSSDIUTL

PSSDIUTX\*

PSSFDBDI

Protocol: PSJ DISPLAY DRUG ALLERGIES

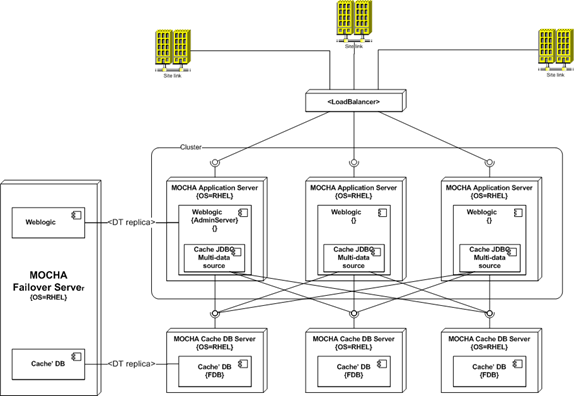
Note: The asterisk (\*) indicates the routine is new to the package.

#### Design Element Tables

N/A

## Network Detailed Design

The Network Detailed Design is below:



### Security

No new functionality has been added that would require addition security measures.

### Privacy

No new functionality has been added that would require addition privacy measures.

## Service Oriented Architecture / ESS Detailed Design

ME2 uses the MOCHA Server service but does not leverage any enterprise services. MOCHA Server is a PRE data access utility and is not published to the enterprise.

## Oriented Architecture / ESS Detailed Design

N/A

# External System Interface Design

## Interface Architecture

Please refer to the block component diagram in section 3.1.x for the ME2 system and relevant dependencies.

## Interface Detailed Design

For interface details see Forum DBIAs 2378, 5367, 5531, 5729, 6071, 6072

# Human-Machine Interface

MOCHA uses Character-Based User Interface (CHUI) to display and query information from users. This technology will sometimes be commonly referred to as “roll and scroll” output. ME2 is a terminal based application and does not have a GUI.

## Interface Design Rules

N/A

## Inputs

Mainly keyboard entry is used for Pharmacy application Input.

## Outputs

Terminal Output display for Pharmacy applications.

## Navigation Hierarchy

N/A

# Attachment A – Approval Signatures

This section is used to document the approval of the System Design Document. The review should be conducted face to face where signatures can be obtained ‘live’ during the review. If unable to conduct a face-to-face meeting then it should be held via LiveMeeting and concurrence captured during the meeting. The Scribe should add /es/name by each position cited. Example provided below.

The Business Sponsor and Project Manager are required to sign.

Signed:

, VA Project Manager

*< Project Manager >*

Signed:

, VHA PBM, Associate Chief Consultant, Clinical Informatics/Reengineering

*< Business Sponsor >*