

Missouri State Highway Patrol

Detailed Design Specification

OCN Query Application

Version 2.0

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1. Document Description

1.1 Intent

This document serves as the requirements specification for the Missouri Offense Cycle Number (OCN) Query Application. The document is intended to facilitate common understanding of the application functionality among stakeholders, as well as provide a functional specification for further design work by architects and developers.

Upon acceptance by all stakeholders, this document will serve as the baseline design specification for the duration of the software development lifecycle. As such, any modifications to this specification will be subject to the change control process described in the master project plan.

1.2 Executive Summary

To provide Prosecutors using Case Management Systems the ability to query the files of the Missouri Computerized Criminal History (CCH) System to retrieve and import arrest information.

This service will provide business value to all criminal justice agencies by expanding the sharing of criminal history information and ensuring that OCN's are captured and shared correctly. In particular this service will provide business value to Prosecutors by ensuring that they have access to the necessary arrest information to file charges in a timely manner.

1.3 Overview

Missouri Prosecutors report that on average Missouri law-enforcement agencies only submit OCNs on 50% of their referrals for prosecution. When this OCN is not shared with the prosecutor in an accurate/timely manner, then the criminal history available within the repository remains incomplete. Through internal meetings and National Center for State Courts/SEARCH training sessions an OCN Query approach has been identified. Since the repository receives 88% of arrest information electronically via live scan device, the vast majority of OCN that are not in the Prosecutors' system exists in CCH when the prosecutor receives the referral.

Using this OCN Query, if a Prosecutor was not provided an OCN – by law enforcement, the Prosecutor could query Missouri Uniform Law Enforcement System (MULES)/CCH for OCN/arrest data thus ensuring record completeness. An added benefit of this query would be that Prosecutors could import the OCN and other pertinent arrest data directly into their Case Management system thus automating a data entry process. In addition, a web portal will also be built for those prosecutors that do not have a standardized interface to this system but would still like the ability to query and receive this information from a secure website.

This service will provide the most benefit to Prosecutors when the arrest information reported by law-enforcement is submitted electronically to the state repository via live scan device. Arrests



not reported by live scan device will still be accessible, however, there will be a delay between the arrest and its receipt and entry into repository files.

1.4 Project Scope/Vision

1.4.1 Vision

The OCN Query project is part of the Missouri State Highway Patrol's strategic plan to increase the information sharing of OCN information to increase criminal history completeness. At a high-level, the roadmap calls for the implementation of a user interface to support the following goals:

- Increase the number of prosecutor and/or court dispositions reported to the repository that can be linked by OCN to a criminal arrest.
- Give users the ability to import arrest information into their Case Management System via National Information Exchange Model (NIEM) or Comma Separated Values (CSV) file thereby greatly reducing the amount of time required to enter a case.
- Provide two avenues for users to retrieve OCN information: 1) via user interface; and 2) via system to system interface.

1.4.2 Scope

The initial scope of this project is limited to an interface that would allow Prosecutors to query arrest information from the CCH. This query would not return any other sort of criminal history information. In addition, the initial scope of this project is primarily for a Prosecutor Query; however, an eye will be kept toward uses for the Courts as well.

This query capability will include a user interface to query and view OCN information and a system-to-system interface that can be queried programmatically from the prosecutor's software that is compatible with system-to-system interface developed in this project.

1.5 Information Description

The User Interface component of the OCN Query will allow users to query the Missouri CCH and return the results on screen, with the option of downloading the result to a CSV or NIEM file. Meanwhile, the system to system interface component of this application would accomplish the same result without requiring the user interface but instead exchanging the information with an external case management system. While no information will be directly stored within the application itself, all information will be indirectly stored via a logging mechanism that will track specific data related to each query and result. All data stored in these logs will be purged according to the schedule dictated by CJIS Security Policy.

All data exchanged via both the user interface and system to system interface must be considered as highly sensitive criminal justice information containing both closed records and Personal Identifiable Information and so must meet all CJIS Security Requirements related to information privacy.



1.6 Functional Areas

Provide a one to two paragraph explanation for each of the high-level functional areas of the application. Functional areas are often grouped by application access points, user types, frontend/backend functionality, etc. The granularity used will depend largely on the type of project or application.

Examples:

1.6.1 Web Browser Interface

The user interface for the OCN Query will be via web browser. This interface will provide the mechanism for users to search, view, and export query results.

1.6.2 System to System Interface

Prosecutor personnel have indicated that a direct system to system interface between user case management systems and the Missouri CCH would be beneficial for the retrieval and import of OCN and arrest data. As part of this project, this OCN Query will provide a NIEM conformant interface for user case management systems to connect to, authenticate, query, and retrieve OCN data in a manner compliant with CJIS Security Requirements.

1.6.3 Reporting

As part of the OCN Query project a number of pre-defined reports will be created to support the system to include information on users/queries. These reports will be accessible by authorized personnel using the predetermined Missouri State Highway Patrol report application that is separate from the OCN Query System described in this document.

2. Hardware/Software Environment

This section describes the hardware and software components (products, versions, etc.) that are required by the application as well as any required development tools. See each section below for additional information.

Example introductory text:

The OCN QUERY application requires the following minimum hardware and software configurations. Performance of the OCN QUERY application is dependent on multiple factors, including hardware, network, software, and installation choices that may be beyond the Missouri State Highway Patrol's control.

2.1 Hardware

2.1.1 Server

Server Minimum Requirements	
-----------------------------	--



Application Server	Operating System: Windows Server
Database Server	Operating System: Microsoft SQL Server

2.2 Software

2.2.1 Server

Server	Minimum Requirements
OCN Query Database Server	SQL Server 2013
(Development, Test, Production)	
OCN Query Application Server	.NET Framework 4.5
(Development, Test, Production)	

2.2.2 Workstation

Workstation	Minimum Requirements
OCN Query User	Compatible Browser (IE 10 or above)

Although the OCN Query application will be substantially available using other web browsers, full compatibility with other browsers or versions cannot be guaranteed. Additionally, when using Internet Explorer v10.0 and above, the OCN Query web site URL must be added to the Compatibility View settings list to function properly.

2.3 Software Development Tools

OCN QUERY application development will utilize the following tools and technologies:

- Visual Studio 2013
- > Team Foundation Server 2013

3. Application Architecture

The OCN Query solution architecture consists of the following high-level software components:

- Web Presentation Layer
- ➤ Web Service Interface Layer
- Business Logic Layer

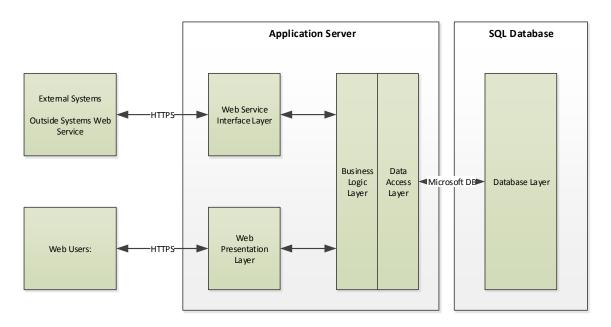


- Data Access layer
- Database layer

The web presentation layer will be implemented using the MVC framework which allows for the rapid creation of a rich, secure web-based user interface with minimal custom development. This layer provides the web browser application that will be deployed to the application server and used to access the OCN Query application.

The business logic and data access layers will perform processing of the data requests coming from the web presentation layer and web service interface layer (XML requests) against the Criminal History database as well as ensure uniform enforcement of business rules.

OCN Query Processing System Overall Architecture



3.1 User Profile

The following user profiles have been identified for the OCN Query application:

- Authorized Users: Query using exact match or demographic search via website
- External Systems: Query using exact match or demographic search via exposed web service layer

Refer to the security section of this document for a detailed listing of actions and permissions for each user profile.

3.2 Application Framework

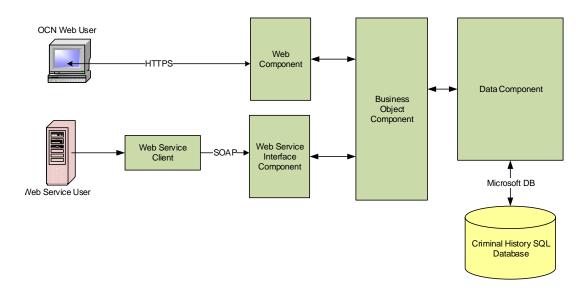
The OCN Query application includes the following high level components. Detailed descriptions of these components are included in Section 4.



- Data Component
- Business Objects Component
- ➤ Web Service Component
- Web Component

The following diagram depicts, at a high level, the OCN Query application and the aforementioned design components:

OCN Query Processing System Component Architecture





3.3 Database Schema

Cycle Master	
Cycle Iviastei	OCN
Cycle Master	SID
Ident	FBI
Cycle Master	DOA
Cycle Master	ORI
Cycle Master	OCA
Cycle Master	ARREST_COUNTY
Cycle Master	MUG
Cycle Master	MUG_LOCATION
Cycle Master	PLM
Cycle Master	DATE_FP_TAKEN
Cycle Master	FPR
Cycle Master	LOCAL_ID
Cycle Master	FIREARM_POS_IND
Cycle_Names (where OCN matches)	FNA
Cycle_Names (where OCN matches)	LNA
Cycle_Names (where OCN matches)	MNA
Ident_Names (where SID matches)	FNA
Ident_Names (where SID matches)	LNA
Ident_Names (where SID matches)	MNA
Cycle_DOB (where OCN matches)	DOB
Ident_DOB (where SID matches)	DOB
Cycle_SOC (where SID matches)	SOC
Ident_SOC (where OCN matches)	SOC
Cycle_MNU (where OCN matches)	CATEGORY & NUMBER
Cycle_SMT (where OCN matches)	SMT
Cycle_Master	SEX
Cycle_Master	RAC
Cycle_Master	HGT
Cycle_Master	WGT
Cycle_Master	EYE
Cycle_Master	HAI
Cycle_Master	SKN
Cycle_Address (where OCN matches)	ADR_ST1
Cycle_Address (where OCN matches)	CIT
Cycle_Address (where OCN matches)	STA
Cycle_Address (where OCN matches)	ZIP_CODE
Cycle_OCC (where OCN matches)	EMP_NAME
Cycle_OCC (where OCN matches)	ADR_ST1
Cycle_OCC (where OCN matches)	CIT
	Ident Cycle Master Cycle Names (where OCN matches) Cycle Names (where SID matches) Ident Names (where SID matches) Ident Names (where SID matches) Ident DOB (where SID matches) Cycle DOB (where SID matches) Cycle SOC (where SID matches) Cycle SOC (where OCN matches) Cycle Master



Library Query Response	Table	Field Name
OCN - 8 Alpha/Num	Cycle Master	OCN
Date of Arrest - 8 Num	Cycle Master	DOA
Arrest ORI - 9 Alpha/Num	Cycle Master	ORI
Arrest County - 3 Num	Cycle Master	ARREST_COUNTY
Subject First Name - 10 Alpha	Cycle_Names (where OCN matches)	FNA
Subject Last Name - 16 Alpha	Cycle_Names (where OCN matches)	LNA
Subject Middle Name - 10 Alpha	Cycle_Names (where OCN matches)	MNA
Subject DOB - 8 Num	Cycle_DOB (where OCN matches)	DOB
Subject SSN - 9 Num	Cycle_SOC (where SID matches)	SOC
Subject Sex - 1 Alpha	Cycle_Master	SEX
Subject Race - 1 Alpha	Cycle_Master	RAC
Subject OCA -	Cycle Master	OCA
Subject Local ID - 8 Alpha/Num	Cycle Master	OCA
Subject Local ID - 8 Alpha/Num	Arrest_Charges (where OCN matches)	WARRANT_NUM

Input Data	Table	Field
OCN - 8 Alpha/Num	Cycle_Master	OCN
Subject's First Name - 10 Alpha	Ident_Names	LNA (LSX Soundex)
Subject's Last Name - 16 Alpha (required)	Ident_Names	FNA (FSX Soundex)
Soundex Indicator - 1 Alpha		
Subject's Date of Birth - 8 Num	Ident_DOB	DOB
DOB Plus or Minus One Year Indicator - 1 Alpha		
Subject's SSN - 9 Num	Ident_SOC	SOC
Subject's Arrest County - 3 Num	Cycle_Master	Arrest_County
Subject's Date of Arrest - 8 Num	Cycle_Master	DOA
Subject's Date of Arrest (high date) - 8 Num		
Subject's Date of Offense - 8 Num	Arrest_Charges	D00
Subject's Date of Offense (high date) - 8 Num		
Subject's OCA -	Cycle_Master	OCA
Subject's Local ID Number - 8 Alpha/Num	Cycle_Master	Local_ID
Subject's Warrant Number - 15 Alpha/Num	Arrest_Charges	Warrant_Num

3.4 Security

3.4.1 Application Security

The OCN Query web application will utilize the ADFS Security framework for authorization and authentication. This framework allows for security roles and permissions to be easily configured with minimal custom coding.

Access to the web-based user interface will require all authorized users to be registered in the ADFS claims table. Each user must be assigned a unique username, password, and role. This information is maintained by authorized system administrators.



The OCN Query login form will require users to enter their username and password to obtain access to the application_User authorization requires a web user to be assigned one of the following roles:

Authorized OCN Query Users

3.4.2 Infrastructure Security

Database Security

SQL Authentication will be used and database will not be exposed to internet clients.

Network Security

Network Security will be handled by MSHP Network Staff.

4. Business Component (Process) Design

4.1 OCN Query Data Component

The OCN Query Data Component contains a set of classes to represent persistent data maintained within the OCN Query application database. The component includes a class for each entity (table) used by the application. These classes, in turn, include methods to get and set each field (column) of the underlying table, as well as other methods useful for navigating relationships within the data model. Instances of these classes represent individual rows within the database.

The primary responsibilities of the Data Component are as follows:

- Abstract interaction with the database
- Provide containers for moving persistent data through the application

It is important to note that the OCN Query Application will have a read-only relationship with the database. No information in the database will be modified or deleted by the OCN Query Application. In this regard the associated View accepts the query and passes the parameter to the corresponding Controller. The Controller interfaces with the underlying persistence provider to query the database and then pass the retrieved data to the view according to the associated Model.

As an example, suppose the application wishes to perform an OCN query against the database. This would be accomplished as follows:

- The application passes the OCN to be searched as a parameter to the FullResponse() method located in the Home Controller.
- ➤ The FullResponse() method creates an object according to the CycleModel and interfaces with the persistence provider to locate any records within the database that match the OCN that was passed in as a parameter.
- Once a record and all necessary fields are retrieved from the database according to the Data Model (CycleModel), the information is passed back to the client using the "FullResponse" View which in turn displays all corresponding fields according to the Data Model.



4.1.1 Component Interface Description

4.2 OCN Query Business Object Component

The OCN Query Business Object Component contains a set of classes which encapsulate the business rules and processing logic implemented within the OCN Query application. The classes included in this component loosely map to data entities managed by the application while the methods of the classes map to business workflows.

The primary responsibilities of the Business Object Component are as follows:

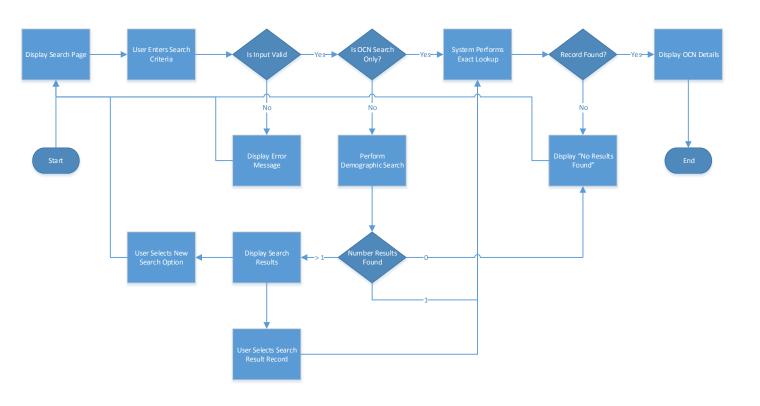
- Provide a uniform interface to OCN Query business logic
- > Broker interaction between client components and the data component
- Enforce business rules
- Implement workflows

Following the example from the previous section, suppose a client component (i.e. Web Service Interface or Web Component) wishes to query an OCN currently stored in the database. This would be accomplished as follows:

- The client component calls the FullResponse() Action Result of the Home Controller, supplying the OCN of the record to be searched as a parameter.
- The OCN parameter is validated against the Data Model to ensure that the field is not null and that it passes other validation criteria (field length, type, valid characters, etc.)
- If validation errors occur, the Data Model notifies the Controller/View and the client component provides an appropriate error message. In this case, the search is not performed against the database.
- ➤ If the search passes validation then the HomeController uses the data component to search for the desired arrest and returns an OCN Object according to the Data Model (CycleModel). The fields of this instance are populated with the values from the database.
- ➤ The HomeController then passes the matching OCN Object back to the View which in turn displays the object according to the Data Model.



4.2.1 Component Workflow



4.2.2 Source Code Matrix

Class Name	Purpose



CycleModel Class	 The root of the business objects class hierarchy – all business objects inherit (either directly or indirectly) from this class. Contains the properties of an OCN object, to include all validation rules.
HomeController Class	 Contains the logic for interacting with the database persistence layer for searches based on OCN only. Directs the client to display all corresponding views associated with an OCN only search.
DemoController Class	 Contains the logic for interacting with the database persistence layer for searches based on Demographics (non-OCN Search). Directs the client to display all corresponding views associated with a search by demographics.

5. External Data Exchange Specification

Interaction between OCN Query and external systems will utilize a standard XML message format. The following table lists the exchange format for each external data exchange handled by the OCN Query application:

GetResultsByOCN - User sends in OCN and respond with Full Response

GetResultsByDemo - User sends in Demographic Information then responds with a library response.

SearchError - User sends in incorrect information, replies with search error.

Transaction Type	Connection Method	Message Format			
OCN Query Web Service Transactions					
Submit Query	Web Service	XML			
Exact Match Response	Web Service	XML			
Demographic	Web Service	XML			
Response					

6. Audit and Logging Design

OCN Query logging will tie in directly with an existing logging database the MSHP utilizes for logging. All inquiries and responses will be logged.

7. User Interface Design

7.1 OCN Search

The OCN search screen allows users to conduct a search against the criminal history database by OCN. The form consists of only one field: OCN. This field will allow a maximum of 8 characters.

After entering the OCN information, the user clicks the "Search" button at the bottom of the form to initiate the search.



The following diagram provides an example of the OCN Search screen:

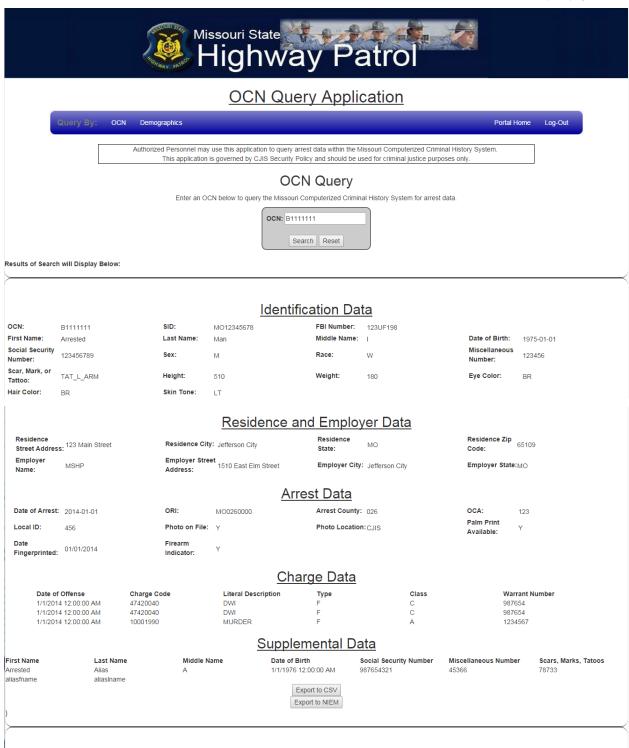


7.2 Full Response

Once the user clicks Submit the OCN will be passed to the Home Controller which will interface with the Data Model and database persistence layer to retrieve the matching OCN. The Full Response of the Search will then be displayed, along with options to export the result in CSV and NIEM formats.

The following diagram provides an example of the Full Response:





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7.3 Demographic Search Screen

The Demographic search screen allows users to conduct a search against the criminal history database by an individual's demographic identifiers. The form consists of 14 fields with field lengths as follows:

- Subject's First Name 10 Alpha (required)
- Subject's Last Name 16 Alpha (required)
- Soundex Indicator 1 Alpha
- Subject's Date of Birth 8 Num
- DOB Plus or Minus One Year Indicator 1 Alpha (conditional)
- Subject's SSN 9 Num (conditional)
- Subject's Arrest County 3 Num
- Subject's Date of Arrest 8 Num (this would also serve as the low date if searching by arrest date range)
- Subject's Date of Arrest (high date) 8 Num
- Subject's Date of Offense 8 Num (this would also serve as the low date if searching by offense date range)
- Subject's Date of Offense (high date) 8 Num
- Subject's OCA 20 Alpha/Num
- Subject's Local ID Number 8 Alpha/Num
- Subject's Warrant Number 15 Alpha/Num

Please Note that First Name and Last Name are required fields. Meanwhile Date of Birth and SSN are conditional in that one or the other must be present for a search to be conducted. After entering the required information, the user clicks the "Search" button at the bottom of the form to initiate the search.

The following diagram provides an example of the Demographic Search screen:





7.4 Library Response

Once the user clicks Submit the Demographic Data will be passed to the Demo Controller which will interface with the Data Model and database persistence layer to retrieve the matching OCN's. If only one OCN is returned then a Full Response (see 7.2) will be returned. If more than one OCN is returned then a Library Response will then be displayed, along with options to view the Full Response for each result returned.

The following diagram provides an example of the Library Response:





8. Reports Design

8.1 OCN Query Summary Report

The OCN Query Summary report will be used by CJIS Personnel to monitor the use of the OCN Query application for a given date range. To create the report, users must first enter a date range. Once the user clicks View Report a report will be generated that will list the ORI's and User-ID's as



well as a summary of the queries and responses spawned from the application during the reporting period selected. Fields included in the report include:

- User ORI
- > Federation ID
- Queries Submitted
- Library Responses Received
- Full Responses Received
- CSV File Downloads
- NIEM Downloads

The following diagram provides an example of the OCN Query Summary Report:

Missouri State Highway Patrol OCN Query Statistics Report Period 9/1/2014 to 9/6/2014

ORI	User ID	Queries Submitted	Library Responses	Full Responses	CSV Downloads	NIEM Downloads
MO026100A	DOEJ	28	18	10	6	8
MO039100A	SMITHK	12	8	4	4	0

9. Deployment Plan

9.1 Environment Preparation

The following environmental requirements must be met.

- > IIS Support of SSL Encryption
- ➤ ADFS Support

9.2 Environment Promotion Procedures

- Before promoting from Dev to Staging; OCN Query Application must undergo unit testing and integration testing.
- ➤ Before promoting from Staging to Production; OCN Query Application must undergo user testing and unit testing.

9.3 Application Setup/Distribution

The following steps must be performed to install a new version of OCN Query application:



- Export the OCN Query file from the VS
- Copy the OCN Query file to the IIS server
- Restart the application server and verify the OCN Query application is functioning

10. Update Frequency

The SIS project dashboard should be updated on a weekly basis, no later than 8A each Monday.

11. Document History

The following table gives a record of major changes to the document. The version number listed does not include the revision number, which indicates minor version numbers.

Version	Date	Author/Reviewer	Change
1.0.0		Drew Wansing	Initial Version
2.0.0	October 15, 2014	Drew Wansing	Follow Up With
			Changes

12. Distribution History

Date	Distributor	Distribution List

13. Attachments and References

Include any additional artifacts that augment the requirements and use cases described in the document. These could be additional as-built documentation from an existing system, IEPD's, detailed business logic artifacts, etc.

14. MSHP Contacts Information

15.1 Client Acceptance

Name	Title	Contact
Drew Wansing	CIT III	573-751-9000 ext 2210

15. Acceptance

Accepted by:	
Date:/	<i>J</i>
A accepted by	

Date: ____/____

15.2 Analysts International Acceptance



Date:	_/_	_/				
Accepted	d by: _					_
Date:	/	/				