OpenFox®

Criminal History System

CPI OpenFox®

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Table *of* Contents

1. Introduction *to* OpenFox Criminal History System

Each state's Criminal History Record Information (CHRI) system plays a critical but often invisible and unrecognized role in serving the U.S. justice system. As the central repository or database that houses a record of an individual's arrests and subsequent dispositions, law enforcement personnel and agencies must have timely access to accurate CHRI records to execute their roles.

When CHRI systems fall short, justice itself can falter. For example, these systems may lack important data points like current judicial or custody data. Even if the systems include all relevant information, state legislation varies concerning disclosure of criminal history records for noncriminal purposes; and many systems struggle to serve their purpose as a central repository while also complying with relevant state and municipal regulations.

Or they may not allow complete criminal history information sharing with in-state criminal justice agencies as well as national systems like the National Crime Information Center (NCIC) and Nlets. For example, technical considerations can interfere; the system should automatically support the Interstate Identification Index (III or III) requirements as well as the requirements of the National Fingerprint File (NFF). For the Nlets interface, the State's system must support the interstate criminal history exchange, including the required data formats and transactions specified by Nlets in the Joint Task Force (JTF) National Information Exchange Model (NIEM) standards.

None of these challenges are insurmountable. The OpenFox Criminal History System (CCH) proves it.

This document is a high-level introduction to capabilities available in the CCH; a full-cycle criminal history records application that includes all of the functionality required to support the collection, storage, management, and dissemination of criminal history data:

- Personal identification data;
- Arrest information;
- Prosecutor data;
- Disposition information; *and*
- Custody and commitment information.

The CCH's major functional components and capabilities are depicted in Figure 1.

OpenFox CCH Product

Architecture
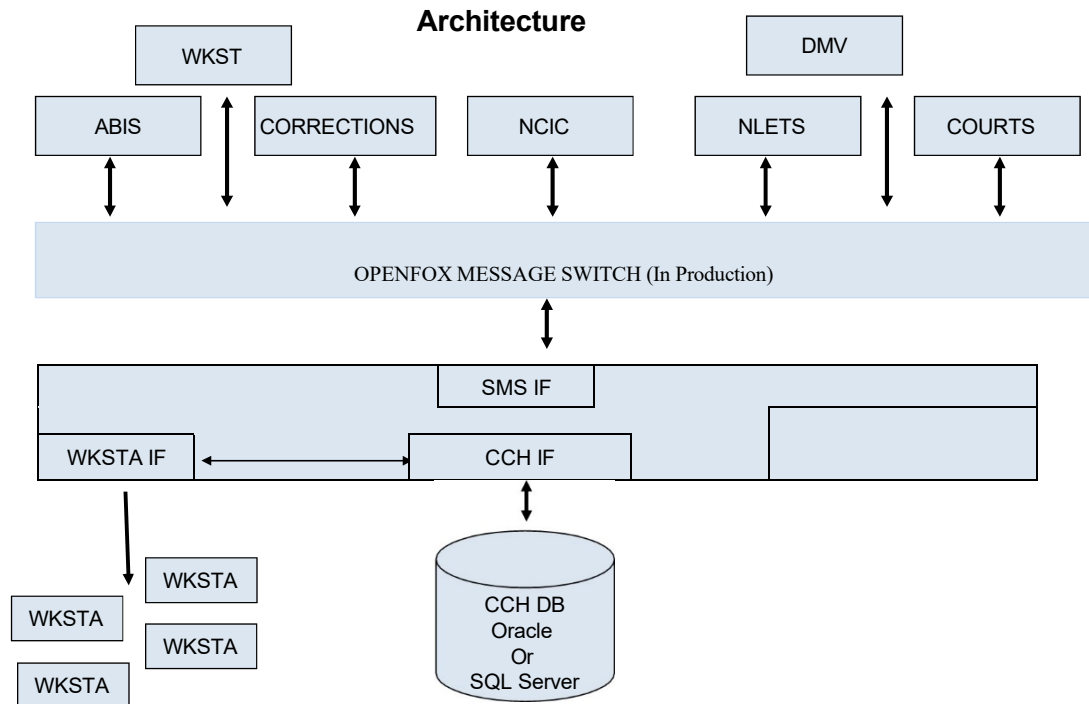
Figure 1

Overview of OpenFox CCH System Components

OpenFox Message Switch Integration

At the heart of the CCH is the OpenFox Message Switch. This component ensures the CCH can communicate and exchange data seamlessly with all appropriate users, from officers on the street to state and federal agencies.

The Message Switch provides the functions required to interconnect systems for data and transaction exchange and flow, including message management functions like routing, logging, editing, guaranteed delivery, various protocol transformations and transport support, transaction processing and queue management.

Figures 1 and 2 show how the major architecture components are integrated and how the CCH connects to other enterprise functions like the state message switch and external cooperating agencies. Figure 1 depicts the architecture in place when the OpenFox CCH system is integrated with an existing state message switch. In this architecture, the OpenFox Message Switch provides connectivity, routing, transaction management, and other functions including interfacing to the existing state message switch. If there is no state message switch, the OpenFox Message Switch can be configured to provide that service, as shown in Figure 2.

The CCH can communicate and exchange data seamlessly with all appropriate users, from officers on the street to state and federal agencies.

As a result, users enjoy the benefits of shared resources, encrypted communications, enhanced security, and a homogeneous look and feel for the user experience. The Desktop implementation also offers robust forms management that supports transaction management and presentation features.

See Chapter 6 for more information on the OpenFox Desktop and CCH Desktop Client.

OpenFox CCH Database

The CCH database stores and processes data in compliance with all relevant criminal justice functional needs.

The CCH database and the stored procedures in the database provide the core functionality to support transaction processing, Automated Fingerprint Identification System (ABIS) interface functionality, client capabilities, III transaction support, and creation and distribution of various disseminations. The standard core database design is implemented in current RDBMS technologies.

See Chapter 2 for more information about CCH database design and architecture.

OpenFox CCH Desktop Client

Administrative users and staff primarily interact with the CCH through a user-friendly desktop client that provides the complete functionality required by records management and administrative staff for managing the criminal history records.

Specifically, the CCH Client is implemented as an OpenFox Desktop Module, integrated with the Messenger Workstation, the Archive Retrieval Client, and other Desktop modules. It operates with the database using OpenFox Message Switch transactions rather than connecting directly to the database.

OpenFox CCH Triple-I (III) Support

The OpenFox CCH supports the critical III standard, including implementation of NFF functionality.

The CCH can manage the III asynchronous messages sent by the FBI. Further, it includes programmed database updates that keep status flags synchronized with the III records, as well as to manage supplemental information and record status changes and updates.

See Chapter 10 for more information about CCH support for III.

OpenFox CCH Interface Support and Processing

The CCH application environment includes the capability to support and integrate a variety of interfaces with other systems that any given agency or organization might use.

The different interface options are generally integrated into the OpenFox Message Switch in order to realize the benefits of routing, queuing, guaranteed delivery, logging, and other advantages that are available when utilizing the switch as the underlying transport and message management platform. That said, external interfaces can and have been implemented using any of the methods listed in the table below; and others can be implemented upon request as well.

FTP	A common interface is based on FTP to exchange mutually agreed upon files. These file formats can be NCIC-style transactions, delimited files, fixed format files, or XML streams.
RDBMS Tables	This interface can be used to exchange data content much the same as the FTP service using tables to perform the actual data transport and exchange between cooperating applications.
TCP/IP Sockets	Another interface option is the use of one of several TCP/IP-based connectivity methods between an external identity, as a station to the OpenFox Message Switch, utilizing a defined application protocol and defined transaction content formats.
WEB Services	WEB Services capability is available in the OpenFox environment. Generally, web service interfaces utilize XML message streams which may or may not be transformed before being presented to a processing component.
MQ Series	The OpenFox environment supports the use of MQ Series as a means of interfacing to external systems. The use of this software requires the proper licenses in the OpenFox environment as well as the external system.

Table 1

OpenFox CCH/ABIS Interface Support and Processing

The OpenFox CCH works seamlessly with the Automated Fingerprint Identification System (ABIS).

The OpenFox CCH-ABIS Interface has been designed for flexibility. It supports transaction exchange with NEC, MORPHO, and COGENT ABIS applications.

The interface normally handles CCH searches submitted from Livescan devices in support of the identification workflow; it also supports data entry transactions to create a new record in the CCH database. Most of the CCH-ABIS interfaces also include the capability for the CCH to create a new SID and return it to the ABIS application when a new record is created.

See Chapter 3 for more information about CCH support for ABIS.

OpenFox CCH Disseminations

The Open Fox CCH can communicate complex and comprehensive information in whatever form is required by the user.

Specifically, the CCH supports many forms and formats of rap sheets including the standard Rap Sheet format, GJXDM, NIEM, various text formats, as well as specialized content rap sheets that disseminate specific types and levels of criminal history information for specific consumers of the dissemination product.

Rap Sheets, one of the most important information disseminations, are created and disseminated in response to workstation requests as well as transactions from the OpenFox Message Switch, other states via NLETS, and from NCIC.

The XML-based standard RAP Sheet will be generated and delivered by the CCH system when responding to a dissemination request. If the response is intended for the NLETS system, the response will be delivered in XML. However, if the response is destined to an in-state device that does not support XML formats, the message will be transformed to display format through the use of Style Sheet processing.

Rap Sheets bound for in-state endpoints will include a summary data panel segment at the top of the generated Rap Sheet.

See Chapter 5 for more information about CCH disseminations and Chapter 6 for records access via the Internet.

OpenFox CCH Subscription Service and Notifications

The CCH can automatically alert users to changes made to records.

The OpenFox Subscription Application provides the capability to ENTER, UPDATE, and QUERY event subscriptions in the OpenFox Message Switch environment. The application manages subscriptions and events in a set of database objects utilizing message switch transactions, procedure language code elements, and SQL statements.

See Chapter 12 for more information about CCH subscription services and notifications.

OpenFox CCH Reporting

Crucially, the CCH includes reporting functionality that helps users to index, search, analyze and report on almost any information resident in the system.

The OpenFox CCH manages data in a SQL SERVER or Oracle RDBMS schema that includes column or field definitions of all data elements, appropriate indexes, and the capability to access for reporting and for maintenance at all levels of data definition – column, record, table, and schema.

Reporting requirements (other than transaction-based reports such as Rap Sheets) can be generated using Jasper Reports or other similar reporting toolsets.

OpenFox CCH Workflow

The OpenFox CCH also allows for accountability: it can capture and report on usage and workflow events.

The Work Flow Queue Entry (WFQE) is a database application that provides the capability to capture and display workflow events and status. Administrators can track:

- Creation and acceptance of a criminal history record;
- Livescan submission of a CCH search;
- Returning the results to ABIS;

- Request of a new SID for a non-ident case;
- Return the new SID;
- Entry of new record detail from AFS;
- Status of the review action in ABIS; *and*
- The final action of accepting the record in the CCH.

OpenFox CCH Training

Training is available to train the trainer and administrative functions. Training is specialized for each customer implementation.

OpenFox CCH Project Management

Project management is provided as a key function in the discovery, planning, and scheduling.

implementation, installation, testing, and support activities that comprise the typical OpenFox CCH implementation project.

PM details are determined and defined as part of the basic implementation plan and include support for each of the phases of the project.

OpenFox CCH Customer Support

OpenFox CCH support is designed to ensure the client also has a high-performing, up-to-date system.

CCH maintenance contracts include high quality, ongoing support. CPI stands by the product, provide bug fixes as needed, and also work to maintain the system through changes to specifications and standards.

2. CCH Database Architecture *and* Design

The OpenFox CCH database (also referred to as a Computerized Criminal History, or CCH, database) serves as the foundation of its data storage, processing and retrieval functions; architected around the fundamental relationships between criminal history data elements to ensure every relevant piece of information can be captured, retrieved, stored and communicated effectively and efficiently.

Furthermore, the CCH is designed for performance and the utmost in reliability. The highly functional database structure has already been stress-tested in real-world applications through deployments across multiple states; it makes critical information rapidly accessible to users through straight-forward transaction requests.

The OpenFox CCH data model is implemented using SQL Server or Oracle Relational Database Technology and tools. The database is accessed by and supports several types of activities and core CCH functions, including:

- Collection of arrest, incarceration, and court event information;
- Dissemination of criminal history information to qualified and authorized users; *and*
- Access through the message switch to manage client transactions, including ABIS, GUI Desktop Clients, and other interface programs that support transaction exchange with other databases and cooperating applications such as DMV, Courts, Department of Corrections, etc.

> **The highly functional database structure has already been stress-tested in real-world applications through deployments across**

Figure 2 depicts the basic data relationships in the CCH database schema, explained in detail on the next page, and defines the core data model elements and relationships that support the CCH functionality and capabilities.
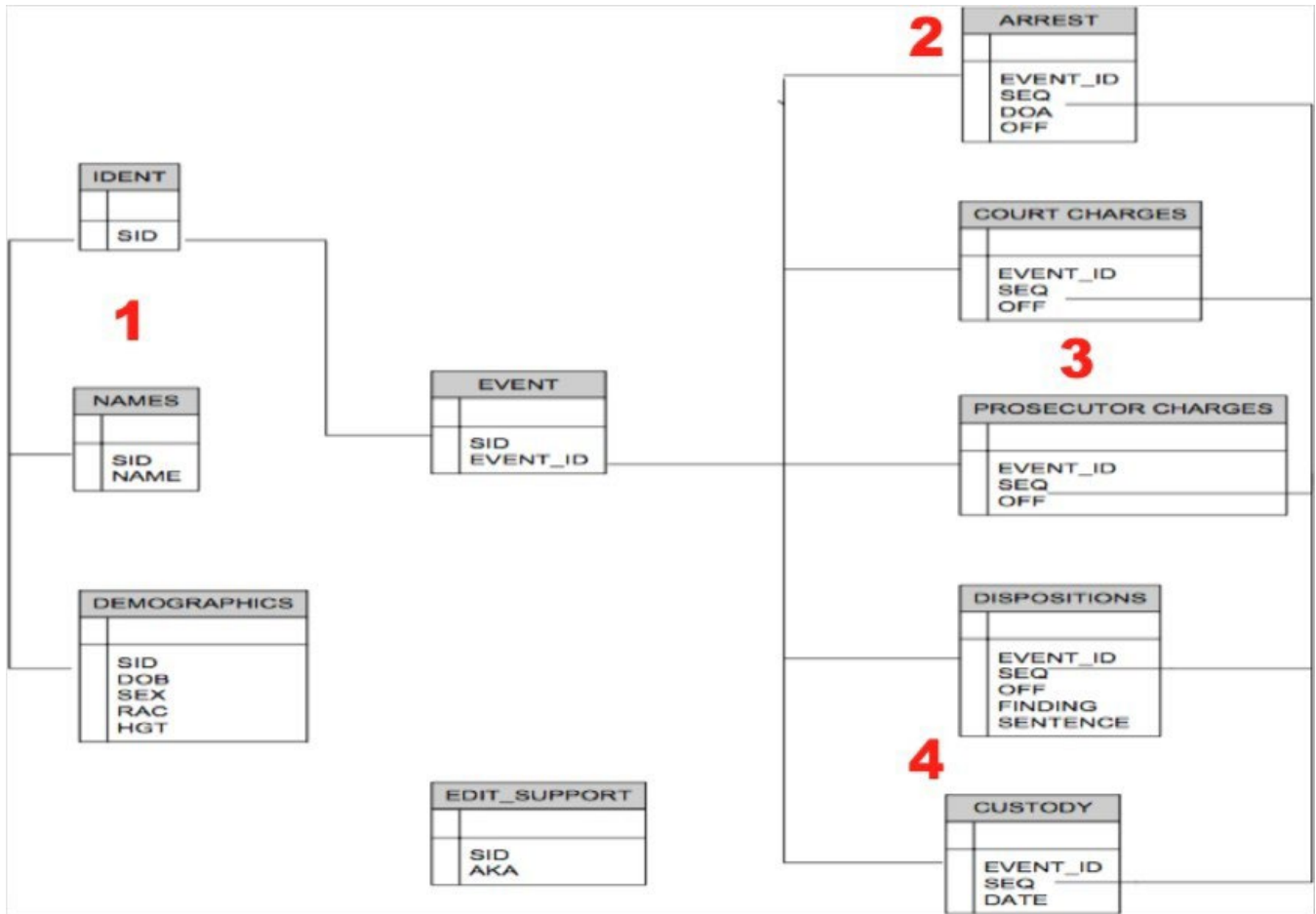

Figure 2

Diagram Breakdown

Step	Table	Description
1	IDENT NAMES	The name and demographics repository function is provided in the IDENT and NAMES tables. The SID is the key that connects entries in these objects together as well as relating the repository entries to an incident.
2	ARREST	The ARREST, or other type of entry such as an APPLICANT fingerprint, is represented in the schema in an FP_CTL_MASTER entry. There is a single entry in this object that defines a record data set in the schema. The master entry is connected to related name repository data using the SID as the connector and key. The incident information, such as arrest data and demographic details, is managed in several schema objects all related to the master using the unique control number, TCN or tracking number, or other unique identifier for each incident.
3	CCHRGES	The CCHRGES table holds all of the charge information pertaining to the incident.
4	DISPOSITION CUSTODY	The DISPOSITION table is used to manage all COURT provided DISPOSITION information through the process, and the CUSTODY information is maintained in the CUSTODY table. The incident-specific information, as opposed to demographics, is related and connected using the incident number or tracking number.

Table 2

There are numerous other edit and translation tables for offense codes, ORIs, and other lookup and display data. The majority of the transaction processing is implemented in stored procedures in the database, which makes usage of the database more efficient.

Note: The Automated Fingerprint Identification System (ABIS) interface provides data and transaction exchange and flows between the CCH core functions and an *external* ABIS system provided by another vendor. The ABIS manages fingerprint images and demographic data supporting arrest events, incarceration activity, and applicant background check activities.

The CCH, on the other hand, manages demographic information and event information that is part of the record, including arrest event data and court event information such as court charges and disposition data.

CCH Core Tables

The following diagram reveals the breakdown of the Ident and Related Tables, illustrating the kind of information each table contains and how the table is structured.
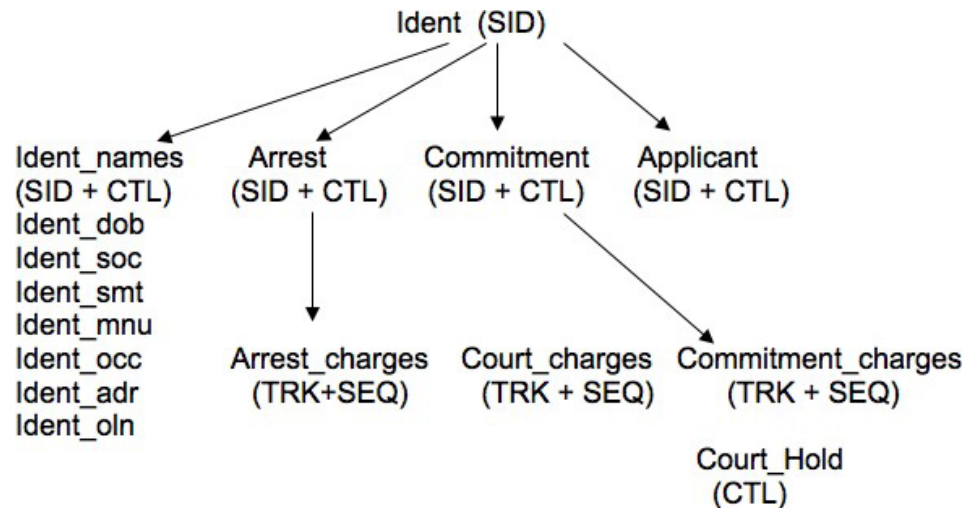

Figure 3

Diagram Notes:

1. State ID (SID) uniquely identifies a person (identification).

2. Sequence number (SEQ) is assigned by the CCH program for new entries or line items present under a SID or record.

   - SEQ = 0 (the initial line item in the record): base information that is displayed on the person master (Identification) screen.
   - SEQ > 0 (subsequent line items in the record): supplemental information displayed on the supplemental screen.

   - The same is true for all other supplemental records.

3. SID + SEQ identifies multiple names, DOB and S,OC etc. within a SID.

4. Track number (TRK – generated internally by the CCH) uniquely identifies an arrest or commitment.

5. Track number and sequence (TRK + SEQ) to identify a charge within a cycle.

6. All names are stored on IDENT_NAMES TABLE.

Creating or Updating a Criminal History Record

1	AT EVENT	The details of an arrest event are captured at the time of the event by law enforcement and recorded using an ABIS-connected Livescan device and data entry capability that is part of the Livescan processing.
2	AT EVENT	The data fingerprint information is indexed and stored in the ABIS database.
3	AT EVENT	Demographic data and event data is forwarded to CCH to search the CCH database in support of a short and efficient search for the subject identity. If there are NO suggested matches returned from CCH to ABIS, a technical search is executed using the demographic and fingerprint images in the ABIS database for an identity match. • If a hit is FOUND, the ABIS and CCH update the record in CCH with the event data. • If there is NO hit found, then the ABIS application sends a request to CCH to create a new record by requesting creation of a new SID. The SID is then used by ABIS to construct and forward to CCH all the event and demographic information. The CCH creates a new CCH database record.
4	AFTER EVENT	Subsequent to the arrest event, when the court adjudicates the matter, the disposition is sent from the court to the CCH to be updated in the CCH record.

Table 3

Other activities that occur in the normal CCH workflow and processing include:

- Responding to requests for Rap Sheets that are submitted from law enforcement through the message switch transaction processing;

- Various record management functions submitted from CCH clients; *and*
- Other CCH transactions from authorized interfaces that submit transactions through the OpenFox Message Switch Interfaces that are configured in the specific implementation.

Database Design and Implementation

The tables used, and their inter-relationships, are designed to meet several goals. For one, the segments and relationships are common design components in criminal history databases.

The structure and relationships are also designed to ease the process of extracting data out of legacy or secondary databases, collecting them in the CCH and nationwide. This design holds information in line with national/federal databases (e.g., FBI, III), without being constrained by their legacy data relationships.

then making use of them – searching, modifying, updating, adding, removing – by users.

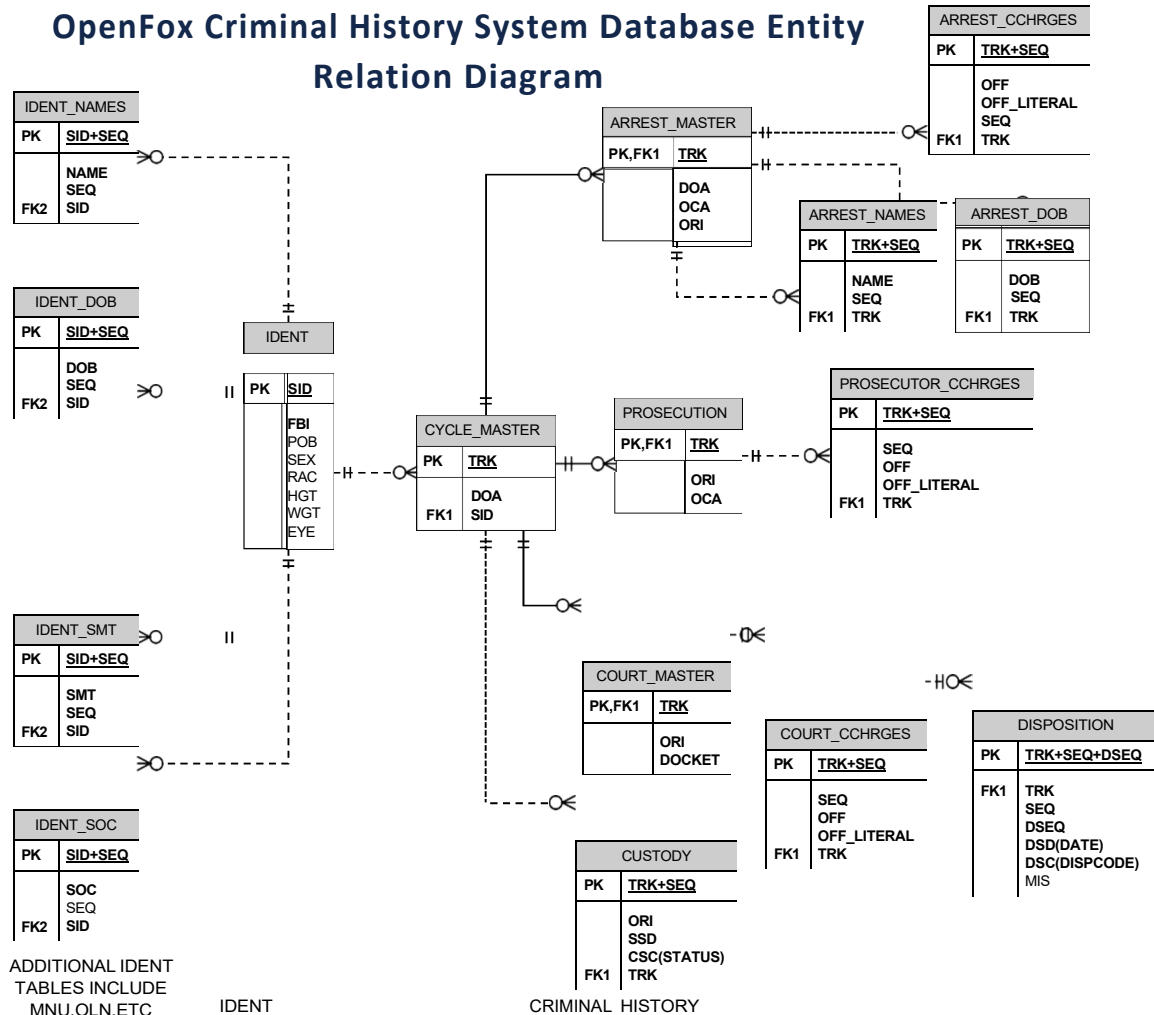Figure 4 below provides a more detailed looked at the tables and database design.

OpenFox Criminal History System Database Entity Relation Diagram

Figure 4

Database Migration – Mapping and Conversion

The migration of the legacy database to the CCH schema is a key step in the successful implementation of the OpenFox CCH product. It's key to understand current data and data structures – and *why* that data is captured and organized the way it is. From there, the database can not only be migrated, it can often be *improved* by making information more readily, reliably and speedily accessible.

The basic steps of the successful migration include the following:

1. Discovery and documentation of the legacy database environment;
2. Creation, validation, and verification of the legacy environment with the OpenFox CCH Product schema;
3. Design and implementation of scripts, programs, utility functions that extract the data out of the legacy database;
4. Design and implementation of scripts, programs, and utility functions that execute the mapping and conversion of data elements into the new database; *and*
5. Quality assurance checks that ensure the integrity of the process.

These five steps are typically undertaken in an iterative fashion: following all steps, making refinements, following again, etc. By repeating the process as necessary through iterative refinements, it becomes possible to produce a complete and quality assured migrated database in the OpenFox CCH Product schema.

3. ABIS Interface

The Automated Fingerprint Identification System (ABIS) uses digital imaging technology to process fingerprint data. Specifically, the ABIS System (from MorphoTrak, Cogent, or an older PRINTRAK System) manages the collection, storage, and identification process of fingerprints for both criminal identification and applicant flow processing.

Originally used by the U.S. Federal Bureau of Investigation (FBI), ABIS has proven popular and useful almost anywhere fingerprints can serve as a form of personal identification or to prevent fraud. For example, a potential employer (e.g., a school) might submit fingerprints and demographic data as part of a background check process during the job applicant flow.

Having such an easy method available to collect and process fingerprints is vitally important, given rising interest and diligence in screening for a wide variety of jobs that include school employees, bus drivers, and any job that is related to children, as well as the general workforce at large.

The OpenFox ABIS Interface is implemented in the standard, basic architecture shown in the diagram on the next page and as described below. We have designed the system for ease and speed.

> **Having such an easy method available to collect and process fingerprints is vitally important, given rising interest and diligence in screening.**

ABIS Interface Functional Components

1: Fingerprint and Data Collection

The fingerprints can be collected using either Livescan devices or a manual process that uses ink images on fingerprint cards.

The images are submitted to the ABIS System (along with some demographic data and event information) for identification, storage, and automatic forwarding to both the CCH and the FBI IABIS system central repository.

The event information can include arrest information, incarceration events such as facility intake and release events, or demographic data to identify a subject.

2: Querying the ABIS/CCH Interface

Once it accepts a fingerprint, the ABIS system will then attempt to identify it against the accumulated database of stored fingerprint images in the ABIS database. The fingerprint may also be sent to the FBI IABIS system for identification and cataloging.

Typically, the ABIS system will first send a query to the state's CCH application before starting the more resource-intensive 10-print technical search through the stored images. By requesting a search in the Computerized Criminal History (CCH) database using demographic name (e.g., name, date of birth, scars and marks, social security or other numeric identifier, sex, race and physical characteristics), it may be possible to narrow the field of possibilities and turn up one or more suggested idents (SIDs).

3: Querying OpenFox CCH Database

If the CCH can return one or more suggested identities (SIDs), it can dramatically truncate the time required to search the complete records stored in ABIS. This can provide much, much faster identification than when the ABIS application must search the stored fingerprints and characteristics without suggested SIDs to start the search.

1. The identification process may result in either a successful identification or a non-ident.

2. If the identification process finds a match, then the ABIS system will send a transaction to the CCH to add an arrest event, modify an existing record, or send applicant details. The CCH will process the input from ABIS based on the transaction type and data content.

3. Finally, the CCH will return an appropriate response to the ABIS system.

This process is explained in greater detail in Chapter 2, Table 3.

Did You Know?

States maintain 70% of all III records; and the FBI, 30%.

Bureau of Justice Statistics
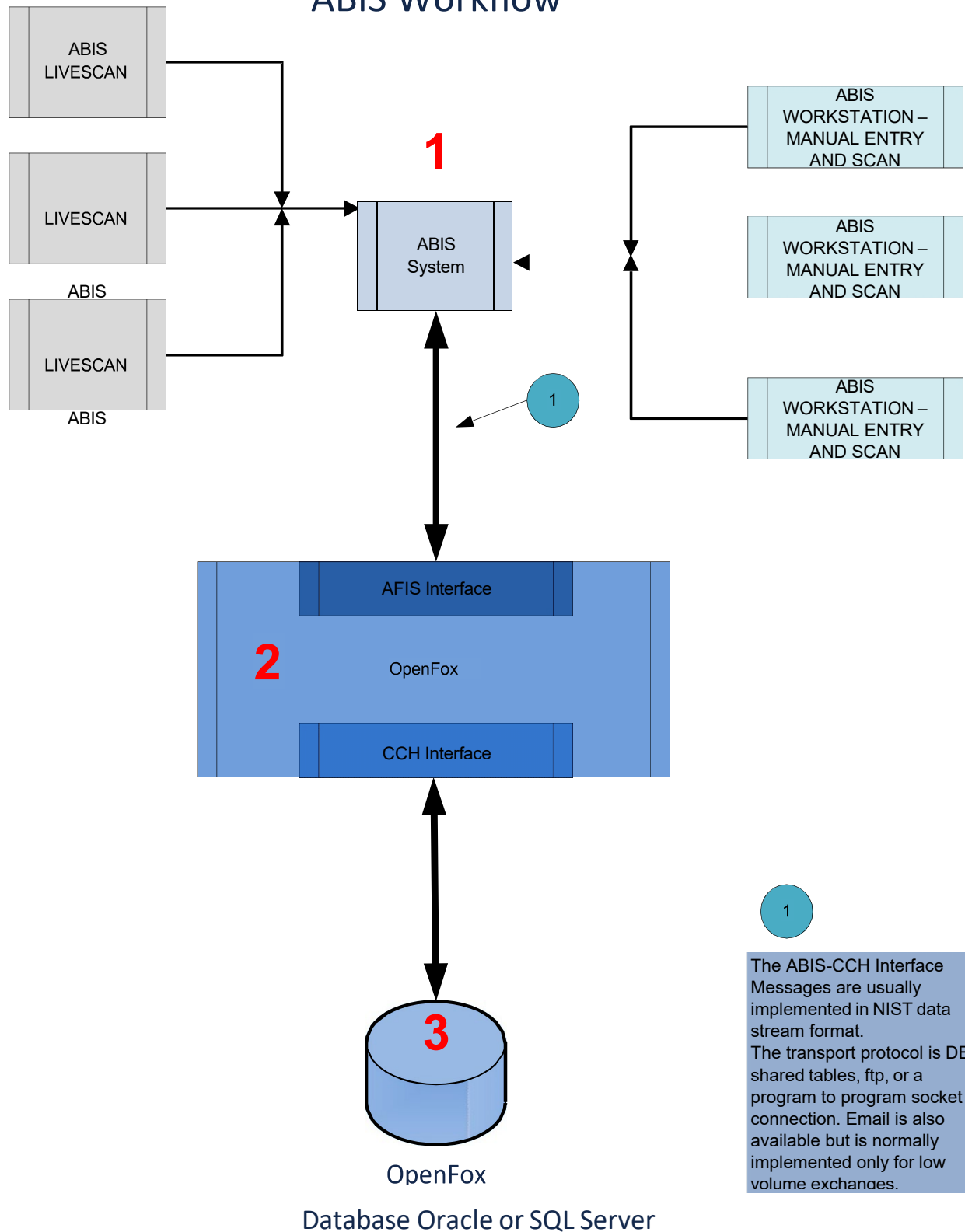
OpenFox CCH Product
ABIS Workflow

ABIS LIVESCAN

LIVESCAN
ABIS

LIVESCAN
ABIS

1

ABIS System

ABIS WORKSTATION – MANUAL ENTRY AND SCAN

ABIS WORKSTATION – MANUAL ENTRY AND SCAN

ABIS WORKSTATION – MANUAL ENTRY AND SCAN

1

AFIS Interface

2   OpenFox

CCH Interface

3

OpenFox
Database Oracle or SQL Server

1

The ABIS-CCH Interface Messages are usually implemented in NIST data stream format.
The transport protocol is DB shared tables, ftp, or a program to program socket connection. Email is also available but is normally implemented only for low volume exchanges.

Figure 5

ABIS/CCH Transactions

FLAG	DEFINITION
STS	STATE 0 = SELECT AND PROCESS THIS ENTRY 1 = TRANSACTION HAS BEEN SELECTED AND PROCESSED
TCN	TRANSACTION CONTROL NUMBER This unique number, provided by AFIS, identifies a transaction.
SEQ	SEQUENCE NUMBER This incrementing number determines the order of multiple response rows within a single transaction.
STATS	STATUS This item holds errors and other status information.

Table 4

The significant controls and transaction management flags used by the cooperating applications include those listed in Table 4.

The SEQ column is used to identify the row type within a response that is returned to the TO_ABIS table in response to an SRCR (search request) transaction. The SEQ column is also significant in the DBUR (database update request) transaction as the row unique identifier within the target SID that is to be modified, e.g. the SEQ column provides a unique key to child records within a SID. See "CCH Core Tables" in Chapter 2 for more information.

Did You Know?

48 states receive over 10M criminal justice fingerprints via Livescan devices; 41 receive over 8M noncriminal justice fingerprints.

Bureau of Justice Statistics

ABIS/CCH Transactions and Responses

The allowable transactions and responses for ABIS and CCH offer many possible combinations. The table on the next page presents a quick overview of selected data elements that can be transacted: added, updated, deleted, and searched. Transactions that can occur between ABIS and CCH can include data elements pertaining to demographics, arrest data, custody data, rap sheet data, and more. CCH will return either a SUCCESS or ERROR response to each transaction request submitted by ABIS.

Selected ABIS/CCH Data Elements[1]	
Demographics	**Arrest Data**
Address, Street	Date, Arrest
Address, City	Date, Charge
Address, State	Citation
Address, Zip	Code, Court Charge
Comments	Code, Disposition
Birth, Date	Code, Offense
Birth, Place	Code, Plea
Driver's License Number	Court Disposition Track Number
Eye Color	Status
FBI Number	
Fingerprint, NCIC Code	**Custody Data**
Hair Color	
Height	Jail Name
Name, Last	Jail ORI
Name, First	Jail Case Number
Name, Middle Initial	Jail Custody Date
Occupation	
Palm Print Availability	
Photo Availability	
Race	
Record Type (Felon etc.)	
Sex	
Social Security Number	
Weapon Permit Expiration	
Weapon Permit Registration	
Weight	

Table 5

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[1] This list is not complete.

4. Court Interface - Disposition Management

How It Works

The interface between court information systems and the Computerized Criminal History (CCH) is a critical component in maintaining and managing accurate records.

The court is responsible for adjudicating the case and then communicating or making available the details of the disposition of the case to the CCH. These details can include the final charges, findings, sentences, plea information, and many other administrative details.

The OpenFox CCH is designed with a Court Interface that accepts disposition data from the court system. This interface is usually a web service exchange or a file transfer of a batch of dispositions for a given period of time.

The OpenFox CCH includes all the tools and methods required to support the court interface. The CCH data model provides the database repository, access methods, and business rule implementation for capturing, storing and managing the disposition data from the courts.

Disposition Matching

It's not uncommon for a disposition from the court to fail to match the target event in the CCH; such mismatches can result from how courts operate on cases, especially specific to charge management and handling.

Disposition matching is obviously important to produce a complete and accurate CCH record, so the

OpenFox CCH provides several types and levels of disposition matching methods. Most commonly, if a disposition from the court cannot be matched to the correct arrest event because identification details are incomplete or incorrect, then the CCH will store those court inputs in a court-hold file for manual review and application to the correct CCH record.

For example, a CCH arrest record will be partly identified by a tracking number created at the arrest event and then communicated to both the CCH and also to the court. The court may then consolidate, alter, add or delete charges in the final disposition

process in the normal course of operation. Once those court charges are communicated to the CCH, they may or may not match the original arrest charges. If they don't, the CCH will store the inputs for manual review, as described above.

The Uniform Charge Code

Creating, maintaining, and disseminating accurate CCH records is supported in the OpenFox CCH through the use of the Uniform Charge Code application. This application provides the responsible administrative role with tools to create, store, modify, and distribute charge codes that should be used by arresting agencies, prosecutors, and courts.

Charge codes are important in promoting increased officer safety, supporting accurate background checks for trusted position applications, and creating accurate and complete criminal history records.

By contrast, if an event is not reported with fingerprints and the correct and appropriate charge code(s), that will result in incomplete and inaccurate CCH records that decrease officer safety, increase public safety risks, and eliminate the ability of agencies to enhance and manage charges.

Charge Code management in most state public safety organizations is administered in the steps enumerated in the figure to the right.

The CCH Uniform Charge Code application is described below.

Charge Code Management

The OpenFox Charge Code Management Application provides the administrative and user-level tools required to create, update, and distribute charge codes throughout the public safety organization.

Examples of screens from the OpenFox Charge Code Editor are shown over the next several pages.

Figure 6

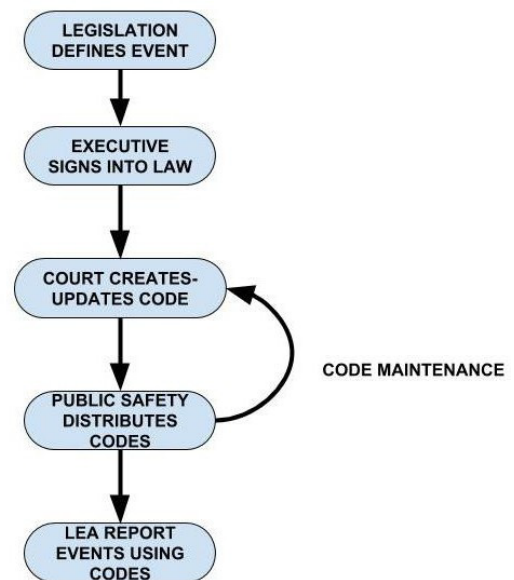| Charges | Statutes | NCIC | NIBRS | Route Filter | Publisher | Reports |

Charges

Search by: Offense ▾ [_____] ☑ Active Charges   Date Active: MM/DD/CCYY

Routing Filter : Odyssey to CHRI ▾ ☑ Apply Filter to All

Offense	Penalty	Charge Description	Degree	NCIC	NIBRS	Rte Filter
318-B:2,I	318-B:26, I(C)	Sale, etc., Cont'r Drug	Felony U	3540 ▾	35A	Y
155:76	N/A	Smoking Indoors - Penalty	Misd B	▾	Multiple	N
167:17-B	N/A	Public Welfare – Prohibited Act	Multiple			N
167:17-B	167:17-c, I(a)	Public Welfare – Prohibited Act ($1,001+ (natural person))	Felony A	3912	39C	N
167:17-B	167:17-c, I(b)	Public Welfare – Prohibited Act ($101 - $1000 (natural person))	Felony B	3913	39C	N
167:17-B	167:17-c, I(c)	Public Welfare – Prohibited Act ($0-$100)	Misd B	3914	39C	N
167:17-B	167:17-c, II(a)	Public Welfare – Prohibited Act ($101+ (business))	Felony U	3915	39B	N
167:17-B	167:17-c, II(b)	Public Welfare – Prohibited Act ($0 - $100 (business))	Misd U	2916	39B	N
636:1	N/A	Robbery		▾		N
636:1	N/A	Robbery	Felony B	2304 ▾	23G	N
636:1	N/A	Robbery - armed/app'd armed/inj	FelonyA	2305	23F	N

[New]   [Save]   [Delete]   [Close]

Figure 7. The Charge Editor

The Charge Editor

The Uniform Charge Editor is the main user interface for Uniform Charge maintenance. Its design is intended to provide a single control point for editing UCT entries in a quick and easy to use tabular format. It provides a filtering mechanism to limit the number of entries listed at any single moment.

Navigating the editor is straight-forward. The "Charges" screen is the entry screen. Navigation tabs listed along the top of the screen enable the user to navigate easily from one screen to the next.

For the current tab (e.g., Charges), the font will be bold, or the tab will be shaded differently to differentiate it from other tabs. Navigation to the Charge Editor is done by pressing the New button.

Navigation back to the main window is accomplished by pressing the Close button.

Charge Editor Fields	
Search by	This is a pick-list of all possible filters which include Offense, Penalty, and Charge Description.
Search by String	This is a text field that allows for string searches based upon selection of the "Search by" pick-list.
Routing Filter	This is a pick-list of all possible routing filters.
Active Charges	Provides a quick way to identify active charges based upon the current date.
Effective / Obsolete Date	Form a date range in the format MM/DD/CCYY which provides a way to express an active window for charges.

Charge Editor Fields	
Apply (routing) Filter to All	A check-box to indicate filter should be applied to all entries in the list.
Offense	A display only field that contains the offense statute as part of a charge.
Penalty	A display only field that contains the penalty statute as part of a charge.
Charge Description	As indicated by its name, this is the description of the charge.
Degree	The degree associated with charge. For "bucket" charges this field will indicate multiple values.
NCIC	A pick-list of available NCIC entries. This is the place that this value is maintained.
NIBRS	A pick-list of available NIBRS entries. This is the place that this value is maintained.
Rte Filter	Indicates Y or N to identify to which charges the filter in the above pick-list should be applied.

Double clicking on a charge line causes the Charge Editor window to appear reflecting the Uniform Charge detail. If the line chosen is empty, the action is for adding a new entry.

Actions	
New	Causes the Charge Editor window to appear ready for input of a new Uniform Charge entry.
Save	Causes all modifications to be saved to the database.
Delete	Deletes the current line highlighted. Deletes can also be done by right mouse clicking on a line and clicking on the delete option. A user confirmation must be acknowledged to confirm the user intentions.
Exit	Closes this Window ends this user session.

Figure 8. The Charge Detail Editor

The Charge Detail Editor

The Charge Detail Editor user interface is for editing and viewing of the details of a Uniform Charge entry. This window displays as the result of double-clicking on Charge Editor window. Entry into this screen is from the Charges screen.

Returning to the Charges screen can be accomplished by clicking on any of the three buttons, i.e. Save, Delete, or Cancel.

Charge Detail Editor Fields	
Description	This is a description of the charge, maximum size is 50 characters.
Smart Code	This field is system generated and is not editable by the user. It is a composite code designed to "tell the complete story" of the charge. It is automatically generated and formatted based upon selection of the charge components that include Offense, Penalty, and Degree. Format is as follows: <Offense Code>.<Penalty Code>.<Degree>.
Abbreviated Code	This field is system generated to be an abbreviated version of the Smart Code. Its purpose is to provide a unique code identifier for a charge that could be used in place of the Smart Code. Format is as follows: <Offense Code>.<Sequence #>
Must Appear in Court	This is a checkbox field.

Charge Detail Editor Fields	
Degree	This is a multiple selection pick-list.
Default Degree	This is a pick-list of degree selections, which supplies the default for a "summary" or "bucket" type charge.
NIBRS	This is a multiple-selection pick-list.
Fine Amount	This is a two decimal field that allows for dollars and cents.
Offense	This is a pick-list of available Offense statutes.
Penalty	This is a pick-list of available Penalty statutes.
Effective Date	This is the effective date for when a charge becomes effective. The format is as follows MM/DD/CCYY.
Obsolete Date	This is the date the charge becomes inactive. The format is as follows MM/DD/CCYY.

There are also screens specific to statute entry and modification, NCIC code entry and modification, and NIBRS codes entry and modification. These user interface components provide complete capabilities to manage the charge code elements.

Actions	
Okay	Confirms intent to save changes and returns control to the main window.
Close	Closes this window and returns control to the main window.

Charge Code Distribution

The application provides update and distribution functionality depicted in the business process diagram below (Figure 9).

Uniform Charge Code Summary

The quality and timeliness of criminal history information depends on consistent and accurate event reporting and tracking.

Charge code management enhances the ability and effectiveness of timely and accurate reporting while enhancing uniform access and use of a centrally administered charge code capability.

The OpenFox Charge Code Management application with the uniform Charge Table functionality is the core technology that provides tools, access, and distribution capability that supports this important part of collecting, maintaining, and disseminating consistent and accurate criminal history information.
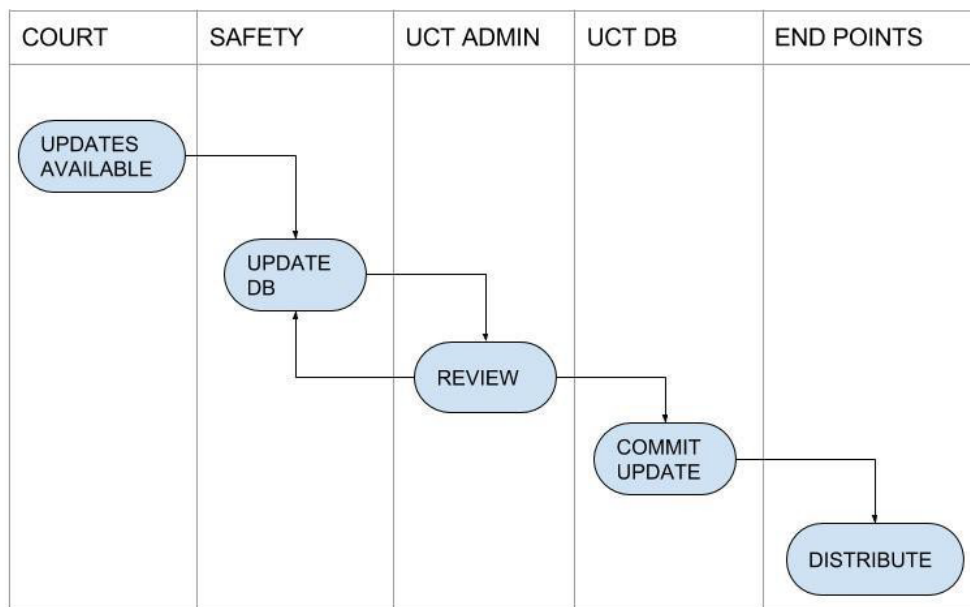
Figure 9

5. Disseminations

The CCH provides the capability to generate, distribute, and log rap sheets and other forms of Computerized Criminal History (CCH) record information. For example:

- A prosecutor might want criminal history information: he or she could do a transaction through the CCH to request a rap sheet from the CCH system, which would deliver a report with

demographic data, aliases, criminal charges, arrest records, etc.

- Similarly, a police officer in the field can request criminal history records in real-time as well; *or*

- Employers might request dissemination to determine if an applicant has a particular class of offense on their record or if they are "all clear."

CCH Advantages

Most disseminations tend to follow closely or exactly a common standard established by the federal government, known as the JTF (Joint Task Force) Rap Sheet Standard. The CCH conforms to that standard by default, with no custom development required from scratch. Further, the CCH is configurable and customizable, enabling state agencies to continue to conform to new changes and initiatives easily, with ongoing support.

However, the process of querying the system and producing the dissemination can vary; and in this

regard, the CCH is designed to offer numerous advantages to users.

For one thing, the CCH can support multiple interfaces smoothly and can handle requests via different protocols, devices, and formats. In other words, the CCH is likely to work easily with the systems, equipment, and processes already used by law enforcement and state agencies, which streamlines deployment and usage significantly.

Similarly, the CCH has already been deployed to customers in many different states; and as a result,

> **Users do not have to develop or have developed custom logic for the OPENFOX CCH to work with a patchwork of rules; they can simply use the existing product with some simple configurations.**

we have already encountered a variety of idiosyncratic regulations, requests, and rules with which the CCH already works or can be easily customized.

As a result, users do not have to develop or have developed custom logic for the OpenFox CCH to work with a patchwork of rules; they can simply use the existing product with some simple configurations.

The CCH is also designed for both efficient and robust communications. Queries can be batched for time- and bandwidth-efficient processing or they can be intelligently queued to ensure they are processed in an appropriate order.

For example, requests from officers who need real-time data during a traffic stop can be intelligently interspersed with a large batch request to ensure the more urgent situation returns information without delay.

RapBack

The CCH also supports RapBack functionality. This powerful capability provides the user with the opportunity to flag a CCH record for activity and have an updated rap sheet disseminated when certain qualifying changes are made to the record.

For example, if a detective is investigating a case, they can flag a suspect's file and be notified anytime information in the file is updated or changed. Typical trigger events include a new arrest or a particular disposition update. When the trigger event occurs, the CCH generates an updated Rap Sheet and delivers it to the requesting party.

Another, perhaps even more topical, example is RapBack for job applicants. In this case, after applying and accepting a new employee for a position, the employer will be automatically notified if new information is added to the employee's rap sheet. Upon receipt of the notification, the employer simply visits the CCH RapBack website to retrieve the updated RAP sheet for review. This enables employers to take the appropriate action, such as termination, in a timely way and frees them from continually manually checking the status of all employees.

Rap Sheets

Though the CCH rap sheets are created generally following the JTF Rap Sheet Standard format, the application is flexible. It supports format, organization, and content modifications to meet state-specific requirements. Below you'll find examples of typical text representations of both a standard and a customized Rap Sheet.

It should be noted that the data for a Rap Sheet is created in common XML and that the text representation is the result of applying customizable Style Sheet processing. These standards work well with a wide array of systems and can be easily modified and updated.

The following is an example of a standard rap sheet.

```
FR.ALIII0000
11:24 04/21/2023 67172
11:24 04/21/2023 71578 COCBI0000
*MRI6677567
TXT

ATN/CPI
*********************  CRIMINAL HISTORY RECORD  **********************

Data As Of              2023-04-21

**************************  Introduction  **************************

This rap sheet was produced in response to the following request:

Subject Name(s)
State Id Number         00000000 (AL)
Purpose Code            C
Attention               CPI

The information in this rap sheet is subject to the following caveats:

************** NOTICE AND WARNING ****************** THIS RECORD IS
CONFIDENTIAL AND RESTRICTED FOR USE BY CRIMINAL JUSTICE AGENCIES ONLY.
THIS IS NOT THE PUBLIC RECORD OF THE EVENTS DEPICTED AND DISSEMINATION
IN VIOLATION OF THIS RESTRICTION WILL SUBJECT THE OFFENDER TO ALL
APPLICABLE FEDERAL AND STATE CRIMINAL PENALTIES. THIS DOCUMENT MUST BE
SECURED AND DESTROYED BY BURNING OR SHREDDING WHEN NO LONGER NEEDED.
(AL)
*******NOTICE******* THIS RECORD IS INVALID AFTER 90 DAYS. FOR CURRENT
INFORMATION RE-CHECK THE ACJIC/CCH SYSTEM. ALL ALABAMA ARRESTS RECEIVED
BY ACJIC ARE INCLUDED IN THIS REPORT. WHEN EXPLANATION OF A CCHRGE OR
DISPOSITION IS NEEDED, COMMUNICATE DIRECTLY WITH THE ARRESTING AGENCY
THAT FURNISHED THE DATA. RECORD IS CONFIDENTIAL AND INTENDED FOR USE BY
CRIMINAL JUSTICE AGENCIES ONLY. (AL)

**************************  IDENTIFICATION  **************************

Subject Name(s)

TEST, TESTTESTTEST T
BUGEYES, BILLY B  (AKA)
TEST, AGAIN    (AKA)

TEST, ONE     (AKA)
```

```
Subject Description

FBI Number              State Id Number
9666000                 00000000 (AL)


Sex                     Race
Male                    White


Height                  Weight                      Date of Birth
6'01"                   300                         1912-12-12
                                                     1966-01-01
                                                     1969-01-01



Hair Color              Eye Color
Brown                   Blue



Place of Birth
AL
Employment
Occupation              J9393939393
Employer                UNKNOWN


*************************  CRIMINAL HISTORY  *************************

=============================== Cycle 001 ===============================
Tracking Number         23088487
Earliest Event Date     1994-03-08


-----------------------------------------------------------------------------------------------------------------
Arrest Date             1994-03-08
Arresting Agency        AL0630200 NORTHPORT POLICE DEPT
Subject's Name          TEST, TESTTESTTEST T
Charge                  1
    Charge Literal  HOMICIDE
    Charge Description  DATE OF OFFENSE: 1994-02-01
    Charge Description  LOCAL CASE NUMBER: 88120076


-----------------------------------------------------------------------------------------------------------------
Court Disposition       (Cycle 001)
Final Disposition Date  1994-05-01
Court Agency            ALAOC0000 ALABAMA ADMIN OFFICE OF COURTS
Charge                  1
    Charge Literal  BURGL 3RD DEGREE
    Charge Description  SENTENCE-CONFINEMENT: 10 YEARS PRN
    Disposition (1994-05-01; CONVICTED)
=============================== Cycle 002 ===============================
Tracking Number         22971589
Earliest Event Date     2007-02-01


-----------------------------------------------------------------------------------------------------------------
Arrest Date             2007-02-01
Arresting Agency        AL0010000 JEFFERSON CO SO
Subject's Name          TEST, TESTTESTTEST
Charge                  1
        Charge Literal  HOMICIDE WILLFUL KILL FAMILY GUN


-----------------------------------------------------------------------------------------------------------------
Court Disposition       (Cycle 002)
Final Disposition Date  2007-03-01
```

```
Court Agency            AL001015J CIRCUIT COURT 10TH BESSEMER
Charge                  1
       Charge Literal   HOMICIDE WILLFUL KILL FAMILY GUN
   Charge Description    SENTENCE-CONFINEMENT: 1 MONTH
   Charge Description    SENTENCE-SUSPENSION: 1 YEAR
   Charge Description    SENTENCE-FINE: $200
          Disposition   ( 2007-03-01; BOND FORFEITURE )
************************  INDEX OF AGENCIES  ************************

Agency                  JEFFERSON CO SO; AL0010000;

---------------------------------------------------------------------------------------
Agency                  NORTHPORT POLICE DEPT; AL0630200;

---------------------------------------------------------------------------------------
Agency                  CIRCUIT COURT 10TH BESSEMER; AL001015J;

---------------------------------------------------------------------------------------
Agency                  ALABAMA ADMIN OFFICE OF COURTS; ALAOC0000;


* * * END OF RECORD * * *
```

The following is an example of a customized Rap Sheet.

The text below in bold is an example of customization. Specifically, caveats and qualifier statements are frequently customized to satisfy state requirements. The bolded text in the RA Sheet below exemplifies this type of customization.

```
FR.IDSIR0000
07:37 08/22/2022 32820
07:37 08/22/2022 69267 COCBI0000
*MRI3935078
TXT
PUR/C.ATN/CPI
SID/ID00500028

                     - IDAHO CRIMINAL HISTORY -

THE SUBJECT OF THIS CRIMINAL RECORD INQUIRY HAS BEEN CONVICTED OF A
FELONY CRIME AS DEFINED BY IDAHO CODE 18-111 AND 18-111A.

INDIVIDUAL MAY BE PROHIBITED FROM POSSESSING OR AQUIRING FIREARM OR
AMMUNITION PURSUANT TO FEDERAL GUN CONTROL ACT OF 1968 AND IDAHO CODE 18-310.

NAME                                    SOC        STATE ID   FBI NO
PUBLIC,CARL C                           123432123  00500028   9003300
RACE      SEX         DOB        HEIGHT    WEIGHT   EYES      HAIR      SKIN
 W        M       05-24-1956      509       153     HAZ       BLN       FAR
COB POB                                 III        MULTI-ST
US  NAMPA ID                             Y          Y

                     EXTENDED INFORMATION
IXDT TYPE     NUMBER
OLN/OLS/OLY  JB123456I          /ID/
SMT          TAT R SHLD
                     ALIAS NAMES
```

```
AKA                                  DOB      RACE SEX
PUBLIC,CARL Q                       05-09-1953  W     M
PULIC,C CARL                        05-24-1956  W     M
PUBLIC,CARL Q                       05-09-1953  W     M
PUBLIC,CARL Q                       05-09-1953  W     M
PUBLIC,CARL Q                       05-09-1953  W     M
PUBLIC,CARL Q                       05-09-1953  W     M


                         ARRESTS AND DISPOSITIONS

ARREST DATE: 01-02-2020 ORI: ID001015C AGENCY: STATE PENITENTIARY
 CASE:        73858
  CCHRGE:      (F) BURGLARY                         COUNTS:  1

  CCHRGE:      (F) BURGLARY                         COUNTS:  1

  CCHRGE:      (F) CONT SUBS POSS/DEL/MANUF       COUNTS:  1

ARREST DATE: 12-01-2005 ORI: ID001013G AGENCY: PROBATION AND PAROLE DIST 4
 CASE:
  CCHRGE:      (M) FTA/CONTEMPT OF COURT          COUNTS:  1

ARREST DATE: 02-02-2014 ORI: ID0010000 AGENCY: ADA COUNTY SO
 CASE:
  CCHRGE:      (M) DOMESTIC BATTERY / ASSAULT     COUNTS:  1

  CCHRGE:      (M) FTA/CONTEMPT OF COURT          COUNTS:  1

  CCHRGE:      (M) FTA/CONTEMPT OF COURT          COUNTS:  1
 COURT:       ID001015J CASE:            DATE:
  CCHRGE:      (M) DOMESTIC BATTERY / ASSAULT     COUNTS:  1
DISP/SENT:    JAIL-2 M. JAIL SUSPENDED-1 M. PROBATION-5 Y.


ARREST DATE: 01-01-2004 ORI: ID0010000 AGENCY: ADA COUNTY SO
 CASE:
  CCHRGE:      (F) BURGLARY/OF VEHICLE            COUNTS:  1

  CCHRGE:      (F) DUI                             COUNTS:  1

ARREST DATE: 04-15-2002 ORI: ID001015Y AGENCY: DLE - CIB (ILETS COMM CENTER)
 CASE:        123
  CCHRGE:      (F) LEWD COND W/MINOR/CHLD UND 16  COUNTS:  1

  CCHRGE:      (F) SEX EXPLOIT OF CHILD UNDER 18  COUNTS:  1
 COURT:       ID001025J CASE: 8888      DATE: 04-15-2002
  CCHRGE:      (F) THEFT                           COUNTS: 1
DISP/SENT:    DISMISSED.
  CCHRGE:      (F) SEX EXPLOIT OF CHILD UNDER 18  COUNTS:  1
DISP/SENT:    DISMISSED.
  CCHRGE:      (F) CRIMINAL SOLICITATION          COUNTS:  1
DISP/SENT:    DISMISSED.
  CCHRGE:      (F) CRIMINAL SOLICITATION          COUNTS:  1
DISP/SENT:    SUSPENDED-YES. DETERMINATE-3 YR. INDETERMINATE-LIFE.
              COURT JURIS-180 D. CONCURRENT. CONSECUTIVE.
              PRISON-01-01-2002. DISMISSED.
**REMARKS: CIVIL RIGHTS RESTORED

ARREST DATE: 04-15-2002 ORI: ID001015Y AGENCY: DLE - CIB (ILETS COMM CENTER)
 CASE:        123
  CCHRGE:      (F) CRIMINAL SOLICITATION          COUNTS:  1
```

```
ARREST DATE: 02-07-2002 ORI: ID001015Y AGENCY: DLE - CIB (ILETS COMM CENTER)
 CASE:        0000
  CCHRGE:     (M) BATTERY                         COUNTS:  1
 COURT:       ID001025J CASE: M0111226   DATE: 03-05-2002
  CCHRGE:     (M) BATTERY                         COUNTS: 1
DISP/SENT:    DISMISSED.

ARREST DATE: 05-05-2001 ORI: ID001015Y AGENCY: DLE - CIB (ILETS COMM CENTER)
 CASE:        125
  CCHRGE:     (F) LEWD COND W/MINOR/CHLD UND 16  COUNTS:  1

ARREST DATE: 02-25-2000 ORI: ID0010000 AGENCY: ADA COUNTY SO
 CASE:        0
  CCHRGE:     (F) KIDNAPPING                      COUNTS:  1
 COURT:       ID001025J CASE: CR88888    DATE: 02-28-2000
  CCHRGE:     (F) KIDNAPPING                      COUNTS: 1
DISP/SENT:    WITHHELD.
**REMARKS: TEST REMARKS

ARREST DATE: 02-25-2000 ORI: ID0010000 AGENCY: ADA COUNTY SO
 CASE:        0
  CCHRGE:     (M) CARRY CONC WEAPON W/O LICENSE  COUNTS:  1
 COURT:       ID001025J CASE: CR98888    DATE: 02-28-2000
  CCHRGE:     (M) CARRY CONC WEAPON W/O LICENSE  COUNTS:  1
DISP/SENT:    DISMISSED.
**REMARKS: TEST REMARKS


ARREST DATE: 02-25-2000 ORI: ID0010000 AGENCY: ADA COUNTY SO
 CASE:        0
  CCHRGE:     (F) FORGERY                         COUNTS:  1
 COURT:       ID001025J CASE: CR987656   DATE: 02-28-2000
  CCHRGE:     (F) FORGERY                         COUNTS: 1
DISP/SENT:    SUSPENDED-Y. DETERMINATE-2Y. INDETERMINATE-2Y.
              PRISON-02-28-2000.
**REMARKS: TEST REMARKS

ARREST DATE: 02-25-2000 ORI: ID0010000 AGENCY: ADA COUNTY SO
 CASE:        0
  CCHRGE:     (F) GRAND THEFT                     COUNTS:  1
 COURT:       ID001025J CASE: CR32123    DATE: 02-28-2000
  CCHRGE:     (M) PETIT THEFT                     COUNTS:  1
DISP/SENT:    JAIL-30D. JAIL SUSPENDED-20D. PROBATION-1Y.
**REMARKS: TEST REMARKS

ARREST DATE: 10-16-1999 ORI: ID0140000 AGENCY: CANYON CO SHERIFF
 CASE:
  CCHRGE:     (M) MISDEMEANOR POSS MARIJUANA     COUNTS:  1

  CCHRGE:     (M) POSS OF DRUG PARAPHERNALIA     COUNTS:  1
 COURT:       ID044015J CASE:            DATE:
  CCHRGE:     (M) MISDEMEANOR POSS MARIJUANA     COUNTS:  1
DISP/SENT:    JAIL-6 M. JAIL SUSPENDED-5M. PROBATION-24 M. FINES-$936.
              RESTITUTION-$500. COSTS-$63.
  CCHRGE:     (M) POSS OF DRUG PARAPHERNALIA     COUNTS:  1
DISP/SENT:    DISMISSED.

ARREST DATE: 01-01-1998 ORI: ID0010000 AGENCY: ADA COUNTY SO
 CASE:        12
  CCHRGE:     (F) BURGLARY                        COUNTS:  1

ARREST DATE: 01-01-1998 ORI: ID0010000 AGENCY: ADA COUNTY SO
 CASE:        153
```

```
  CCHRGE:      (F) RAPE                            COUNTS:  1
 COURT:        ID001025J CASE:           DATE:
  CCHRGE:      (F) BURGLARY                        COUNTS:  1
DISP/SENT:    NOT FILED.

ARREST DATE: 12-31-1997 ORI: ID001015Y AGENCY: DLE - CIB (ILETS COMM CENTER)
 CASE:         123
  CCHRGE:      (F) RAPE                            COUNTS:  1
 COURT:        ID001025J CASE: CR12345    DATE: 02-01-1998
  CCHRGE:      (F) BURGLARY                        COUNTS: 1
DISP/SENT:    SUSPENDED-YES. DETERMINATE-1Y. INDETERMINATE-2Y.
              COURT JURIS-180D. PRISON-02-01-1998.
**REMARKS: TEST REMARKS

ARREST DATE: 12-13-1991 ORI: ID0010000 AGENCY: ADA COUNTY SO
 CASE:         5
  CCHRGE:      (M) BATTERY                         COUNTS:  1

THIS RECORD MAY BE USED ONLY FOR CRIMINAL JUSTICE PURPOSES AS DEFINED BY THE
ILETS BOARD AND NCIC ADVISORY POLICY BOARD.


EOR - END OF IDAHO CRIMINAL HISTORY - END OF RECORD
```

6. Internet Record Access Portal (iRap)

CPI offers a proprietary web-based solution that delivers Criminal History data within seconds in response to public records and non-criminal justice agency requests. iRap is designed to provide both a valuable service to the community and also a significant revenue stream.

Utilizing the OpenFox Message Switch and the OpenFox CCH, iRap leverages Internet technology to provide an efficient and cost-effective delivery system for open record requests. Credentialed users simply make the request for a rap sheet via the web application, and the information is available immediately. iRap supports:

- An uncluttered and user-friendly GUI design;
- Business, agency, and individual users;
- Online individual or batch submissions;
- Criminal record searches specified by multiple identifiers – including name, date of birth, social security number, and optionally additional names (e.g., maiden);
- Persistent shopping cart functionality;
- Immediate payment and monthly email billing options;

- An expiration policy for criminal record viewing;
- Daily email statistics to monitor usage and pending requests;
- Full cycle transaction and dissemination logging; *and*
- Installation either on-site or as a hosted solution.

iRap is built on the OpenFox System, but it utilizes platform-independent open standards technologies (like web application server and XML-based messaging). It conforms to W3C XHTML and CSS standards and is compatible with major browsers.

Additionally, iRap includes:

- Multiple levels of security, including SSL and at the application level;
- Support for batch file submissions;
- Criminal history reports delivered in secure PDF format;
- Robust error handling for communication and network interruptions; *and*
- Easy interfacing with the payment portal of choice.

iRap in Action: MACHS

CPI created the Missouri Automated Criminal History Site (MACHS), a custom-designed implementation of iRap for the Missouri State Highway Patrol. The technologies and designs used in Missouri can be leveraged as a starting point or example for any state implementation.

Home Page Design and Function
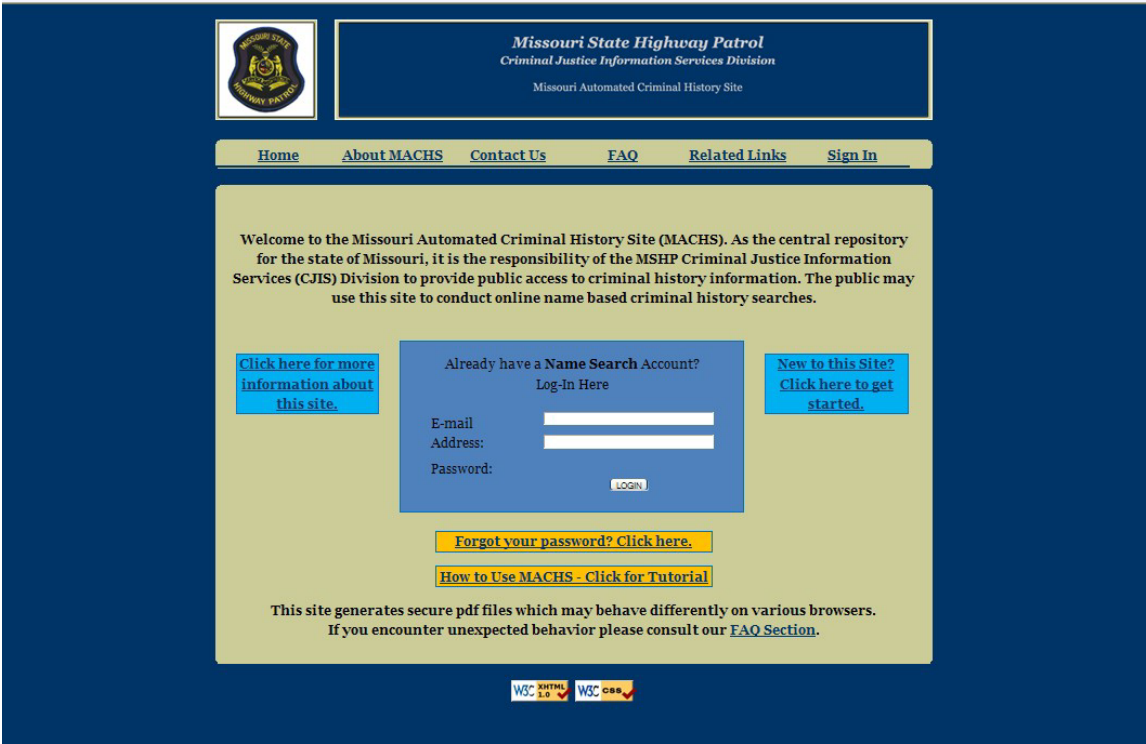
Figure 10

The design of the MACHS Home Page is shown above. The miscellaneous support navigation links provided in the banner are as follows:

iRap Site Navigation	
About Us	A static content page
Close	A static content page
FAQ	A static content page

Related Links	A page containing links to Missouri statutes regarding access to criminal history information, and a link to the Missouri Sex Offender website.
Sign Out	When Sign Out is selected the users session with the website is closed and the session is transferred to the MACHS website Home Page.

The main body of the Home Page contains the links and actions described below.

First-time users of the website will be required to register an account with the website. Selecting 'New to this Site' on the Home Page will direct the user to the first page of the Account Set up instructions.

iRap Home Page Elements	
My Account	After a successful login, if the User select 'My Account' they will be directed to th User Account Home Page.
New to this Site?	This links to the first Account Wizard page.
Log-In Block	Where the user provides their email address and password.
Forgot your password?	This links to the password reset page.

Available Information and Requirements Page
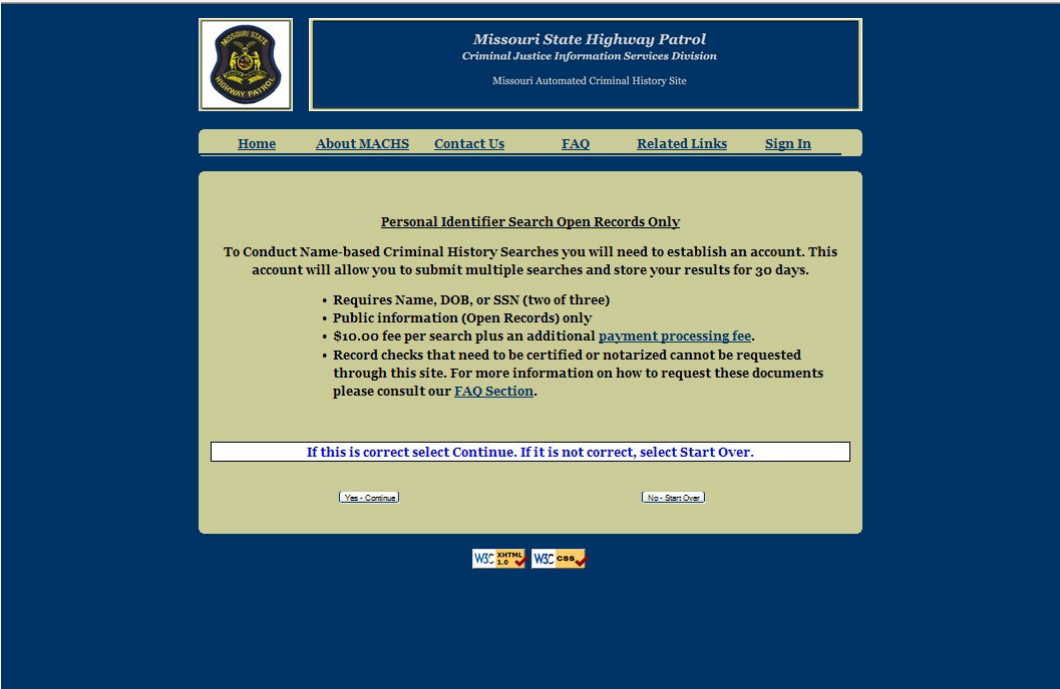
Figure 11

This page contains basic information regarding information available from the site, search parameters, and fee information. The user is given the option of continuing the account registration process or starting over. Selecting the Starting Over button will return the user to the Home Page. Selecting the Continue button the will direct the User to the Account Registration page.

Account Registration Page

Figure 12

Two buttons are provided at the top to allow the User to select the *type* of account they are registering: Individual or Business. The page is presented with Individual Account as the default setting.

The following is a description of the fields presented for the registration of an Individual Account. Items with * are required.

iRap Site Navigation	
*First name	30 characters
*Last name	30 characters
*Street address	100 characters
Apt. number	30 characters
*City	50 characters
*State	2-character state abbreviation pick-list

*ZIP	10 characters
Phone number	20 characters
Re-enter phone number	20 characters
Email address	320 characters
Re-enter email address	320 characters
Password	4 to 14 characters
Re-enter password	4 to 14 characters
Password reset question	Pick list

If the user selects the Business Account Check Box, an extra set of data fields specific to business accounts open. Check boxes are also provided to specify if the account is for a private business or government organization.

Account Registration with Business Fields

Figure 13

The following is a description of the fields presented for the registration of a Business Account. Items with
* are required.

iRap Site Navigation	
*Business name	50 characters
* Business street address	100 characters
Business apt. number	30 characters
*Business City	50 characters
*Business State	2-character state abbreviation pick-list
*Business ZIP	10 characters
*Contact first name	30 characters
*Contact last name	30 characters

iRap Site Navigation	
*Contact street	100 characters
Contact apt. number	30 characters
*Contact city	50 characters
*Contact state	2-character state abbreviation pick-list
*Contact ZIP	10 characters
Phone number	20 characters
Re-enter phone number	20 characters
Email address	320 characters
Re-enter email address	320 characters
Password	4 to 14 characters

iRap Site Navigation	
Re-enter password	4 to 14 characters
Password reset question	Pick list

When the registration page is completed, the user will select the submit button, at which point the data fields will be checked to determine if any of the required fields are blank.

- If the form passes the initial edits, the data is sent to the MACHS web server for processing and submission to the database application.

- If there are no errors, the user's account record will be created.

The user's email address will serve as the User ID. The Password is non-expiring but can be reset by selecting 'Forgot Your Password?' on the Home Page; because the site will only provide Open Record information, FBI CJIS User ID and Password requirements do not apply. Accounts that remain dormant for a period of 12 months will be deactivated.

The Web application will generate an E-mail notification to the User that an account has been created, as shown below.

Missouri State Highway Patrol
Criminal Justice Information Services Division (CJIS)
Welcome to the Missouri Automated Criminal History System website.
This email is confirmation that your new account has been created.
User ID: rck2@sbcglobal.net
Login Page: Click Here - go to home/login page
Thank you for your interest.
Please do not reply to this email. If you feel you have received this email in error and would like to contact the Missouri State Highway Patrol, please email us at machs@mshp.dps.mo.gov or call 573-526-6312.

Figure 14

Account Home Page

Figure 15

After the account has been created and authorized, returning users are directed to the Account Home Page, where they can:

- Change password;
- Update account information;

- View the existing cart; *and/or*
- Start a new name search cart.

When the user selects 'Order History' or 'View Results of Previous Submissions', they will be directed to the Purchase History page.

Purchase History Page

Figure 16

The Purchase History Page will list all searches submitted within the last 30 days. Users have the ability to view individual records or a combined report of all searches submitted as a Shopping Cart group.

Figure 17

Change Passwords Page

Figure 18

When the user selects 'Change your password,' the Change Password page is presented. To offer some protection against the account being hijacked by another person, the user must enter their Old Password, enter a New Password twice for verification, and select 'Reset Passwor.' If the Old Password matches the database entry, and the New Password and Verify New Password fields match, the user's password is changed in the database. Otherwise, an error will be posted, and the password will not be changed in the database.

Account Update Page

Figure 19

When the user selects 'Update Account Information,' they will be presented with the Account Update page. The page is populated with their account information.

The user will have the ability to modify any of the fields in the record and submit the changes to the database.

Name Search Page

Figure 20

When the user selects 'View Existing Cart', they will be presented with their current Cart; when the User selects 'Start a New Cart,' they will be presented with the Name Search page.

To submit an inquiry, the user must be signed into the system, and select the link to the Name Search page.

The Criminal History Name Search page contains fields for the following data elements (Fields with * are mandatory; at least one of the fields with ** is mandatory):

- First name *
- Last name *
- Date of birth (mm/dd/ccyy) **
- Social security number **
- Maiden name
- Alias name
- The user can also submit two alternate or alias name sets:

- First Name 1 (Alias), Last Name 1(Maiden/Alias)
- First Name 2 (Alias), Last Name 2(Maiden/Alias)

The user will be required to select a "Reason for Request" from one of the following categories:

- Employment;
- Licensing;
- Volunteer;
- Personal inquiry; *or*
- Other

If "Other" is selected, the user will be required to provide a reason in the 'Specify' text box. The text box is a free-form field that accepts up to 255 characters.

When the Search Form is completed, the user can choose 'Add to the Cart' or 'View Cart.'

Search Item Added to Cart

Figure 21

When 'Add to Cart' is selected, the query elements are edited. Field errors will be posted back to the page for editing by the user. If no errors are detected, a transaction record linked to the user's account is written to the database, and the user is returned to the Name Search page.

Note that the item count (at the bottom of the screen) in the Cart has been incremented. Each user will have only one (1) open Cart. The Cart will remain open until the user removes all of the items or submits the searches.

The user is given the option to 'View Cart,' or submit another inquiry. If the user selects 'Add to Cart,' the Name Search page is refreshed, and the user again fills out the form.

The running total of items placed in the Cart is updated each time the user adds an item to it.

The figures below represent a second name search and show the results of the submission. Note how the item count has been incremented.

The running total of items placed in the Cart is updated each time the user adds an item to it.

Figure 22

Figure 23

Shopping Cart Page

Figure 24

When the user Selects 'View Cart', they are taken to the Shopping Cart page. The list of search candidates is displayed for review.

The user can remove any record from the Cart, or go 'Back to Name Search.' (Note: the 'Remove' option button may be replaced by checkboxes and a single 'Remove' button at the

bottom to remove all records selected.) The user is also given the option to 'Submit' the Cart for processing.

When the user selects 'Submit,' the Shopping Cart will close, and the user's session will be transferred to the payment portal along with the data elements required by the portal.

Payment Process

Figure 25. Submission to Payment Portal

Figure 26. Billing information.

Figure 27. Credit Card Information Page

Figure 28. Payment Verification Page

Figure 29. Payment Processed Page

Figure 30. Payment Processed Page

Figure 31. Payment Received Page.

When the session is returned to the website, the user will be notified that the inquiries are being processed, and the results should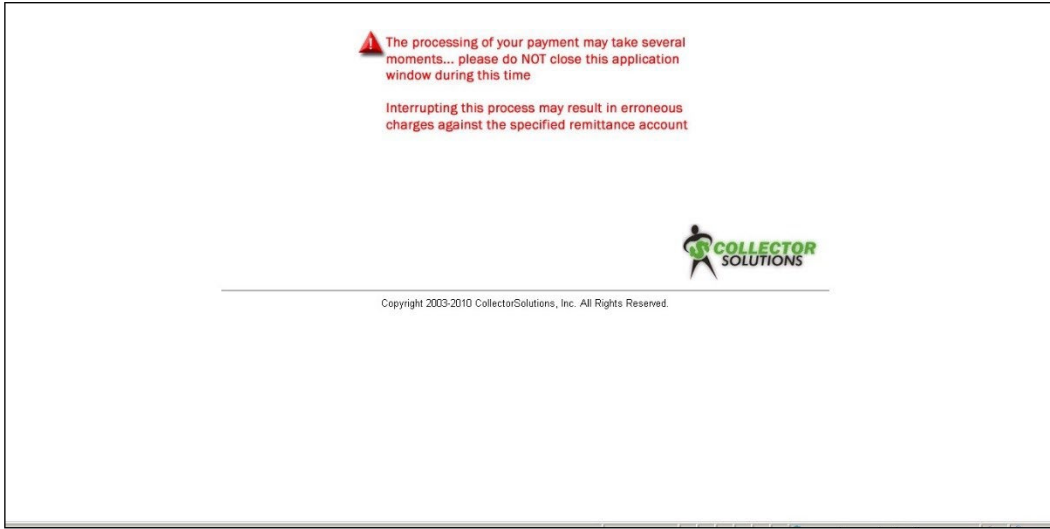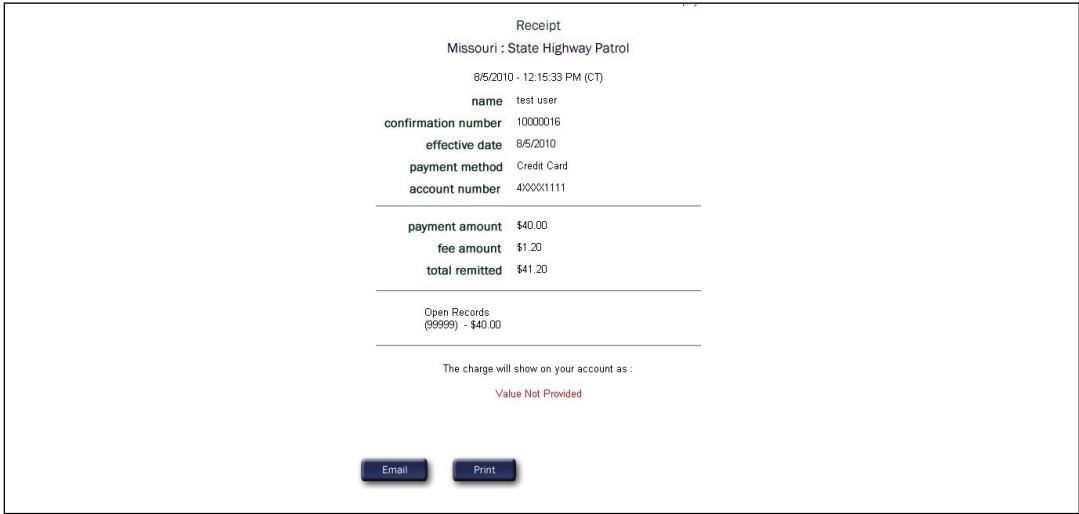 be available within one (1) business day. Transaction confirmation information provided to the website from the portal will be written to the database record for the User's Cart.

Batch Files

If the User has been authorized to submit batch files, two additional fields for the submission of batch files

will be presented on their Name Search Page. The user can select the file by using a 'browse files' feature as shown below (Figure 32).

When the file is submitted for processing, the records will be written to the database and staged for off-hours processing. Agencies authorized for batch records will be billed directly for batch file and Shopping Cart submissions.

Figure 32. Upload File Screen

Sex Offender Inquiry

A sex offender response (SOR) is returned on all individuals that match the criteria below in the MACHS Implementation:

1. The individual's SID Is present in the Sex Offender Hotfile Database; *and*
2. The Hotfile Database Status is anything but 'X' (cancelled); *and*
3. The RC31Exempt Flag does not = 'Y'; *and*
4. The RC31STAUTUS does not = '1B' (notification only).

So, in essence, a SOR search should return every listing that is active in the SOR system but is neither exempt nor has a status of Notification Only.

The web application will interrogate the response to determine if the inquiry resulted in a NO HIT or HIT response.

If the result was a NO HIT, the results will be posted to the Users account and will be available for viewing when the user again logs into the system. A sample is shown on the next page (Figure 33. Sample No Record Response).

If the inquiry resulted in a HIT or multiple possible matches, the response will be posted to an administrative queue for review. After the review process, the operator will approve the result to be posted to the users account and will be available for viewing when the user again logs into the system.

> A Sex Offender Response (SOR) search should return every listing that is active in the SOR system but is neither exempt nor has a status of Notification Only.

Figure 33. Sample No Record Response
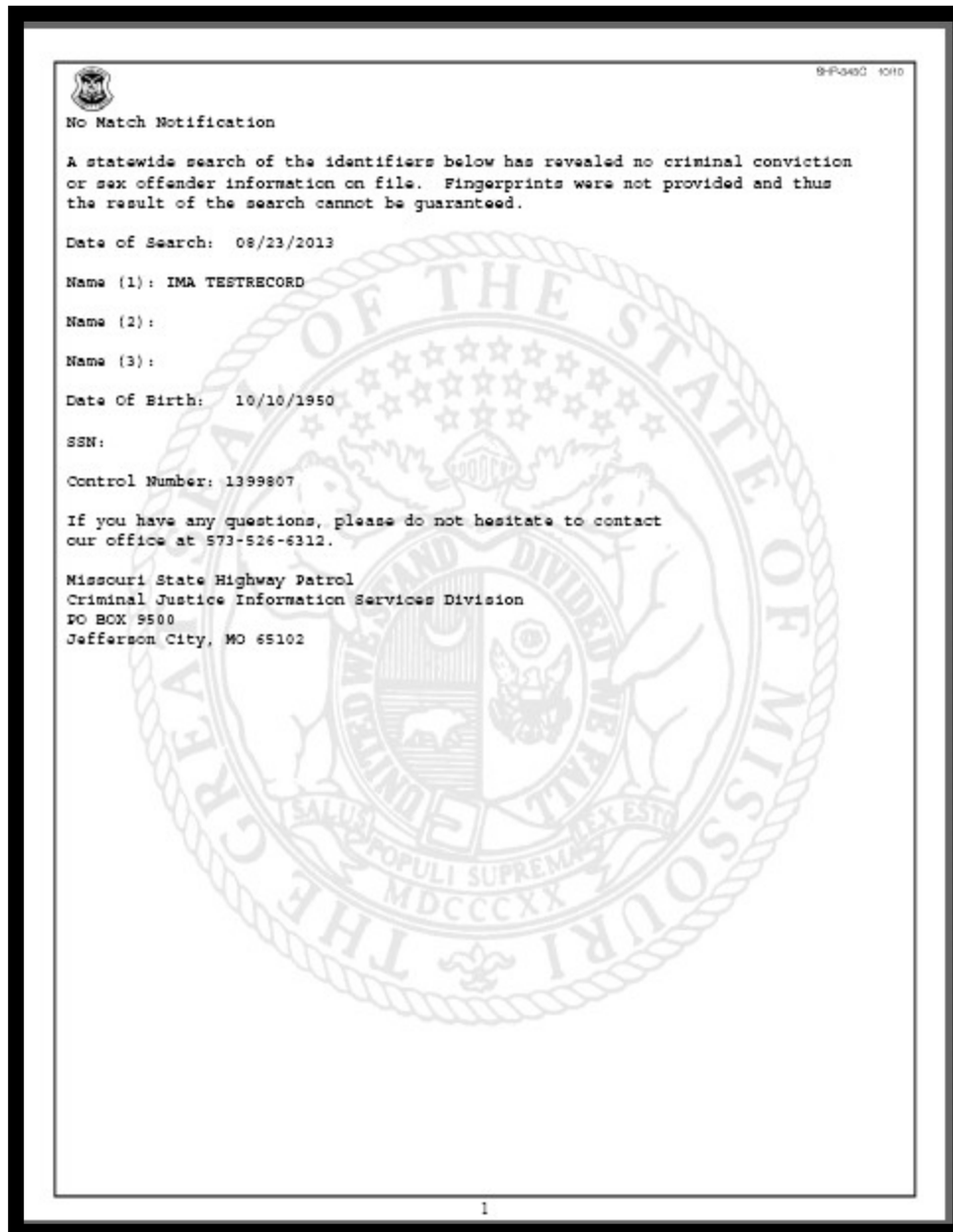
Daily Statistics and Exception Reporting

A daily email report is generated to selected individuals that report the number of search requests in the prior day, previous two days, year-to-date and grand totals. Additionally, there is an exception report that identifies any requests needing action/intervention. An example of the Daily Email Stats Report is presented on the next page.

State Police
Criminal Justice Information Services Division

iRap Agency User Stats

User Counts
Added Yesterday (02/25/2022): 0
Year-To-Date: 1
Grand Total: 148
Search Counts
2 Days Ago (02/24/2022): 734
Yesterday (02/25/2022): 607
Year-To-Date: 38434
Grand Total: 1401521
Private (beginning with XP) Yesterday (02/25/2022): 535
Private (beginning with XP) Year-To-Date: 19579
Private (beginning with XP) Grand Total: 443460
State Licensing/Certification (beginning with XS, not XSF) Yesterday (02/25/2022): 42
State Licensing/Certification (beginning with XS, not XSF) Year-To-Date: 1843
State Licensing/Certification (beginning with XS, not XSF) Grand Total: 63198
State Employment (beginning with XSF) Yesterday (02/25/2022): 30
State Employment (beginning with XSF) Year-To-Date: 17012
State Employment (beginning with XSF) Grand Total: 894863
Pending Requests
Review Pending: 28
Control Numbers: 1991428, 1991442, 1991708, 1992383, 1992692, 1992918, 1992949, 1993293, 1993302, 1993304, 1993444, 1994440, 1994462, 1994483, 1994582, 1996527, 1996668, 1997008, 1997192, 1997258, 1997271, 1997777, 2000204, 2001187, 2001407, 2001504, 2001582, 2001749
Response Pending: 0
Control Numbers: N/A
Report Pending: 0
Control Numbers: N/A

iRap Individual User Stats

User Counts
Added Yesterday (02/25/2022): 33
Year-To-Date: 1765
Grand Total: 31908
Search Counts
2 Days Ago (02/24/2022): 854
Yesterday (02/25/2022): 798
Year-To-Date: 28561
Grand Total: 593160
Pending Requests
Review Pending: 4
Control Numbers: 1958155, 1983711, 1999983, 2001256
Response Pending: 0
Control Numbers: N/A
Report Pending: 0
Control Numbers: N/A

Billing

For each billed account (agencies), at the beginning of the month, an electronic invoice is automatically generated and sent to the billing group for distribution to the agency. The bill provides a summary of the total costs along with an itemized list of each search request.

Example Monthly Email Bill/Invoice

Bill Create Date: 02/01/2022

State Police Automated Criminal History System Billing for January, 2022

Agency
======
ABC000084
CENTER FOR EXCELLENCE
1000 E 34th Street
Favorite City, ZZ 12345

Total Number of Searches Submitted = 7
Total Amount to be Paid = $70.00

Submit Date	Name	DOB	SSN	Cost
01/15/2022	DONALD DUCK	10/26/1960	XXXXX1234	$10.00
01/15/2022	REALLY GOOFY	11/10/1959	XXXXX2234	$10.00
01/17/2022	MICKEY MOUSE	12/27/1965	XXXXX3234	$10.00
01/24/2022	PRINCESS ARIEL	01/16/1992	XXXXX4234	$10.00
01/28/2022	PINK PANTHER	02/15/1991	XXXXX5234	$10.00
01/28/2022	MINI MOUSE	03/17/1982	XXXXX6234	$10.00
01/31/2022	CCHRLIE BROWN	04/07/1976	XXXXX7234	$10.00
			Total =	$70.00

This bill is due 30 days from receipt. For questions regarding your bill please contact the State Police CJIS Division at 555-555-5555 or by e-mail at support@cjis.dps.zz.gov.

Administrative User Functions

Several internal secure web pages exist for the iRap Administrative User to perform various application administrative functions. These include:

- The ability for the records reviewer to approve the dissemination of the background check rap sheet to requestor account;

- Account maintenance functions, such as promoting an individual account to an agency account, demoting an agency account, assigning/changing agency ids, and configuring agency account settings such as daily batch size limit; *and*
- Account search and display.

7. OpenFox Desktop *and* CCH Client

Though many users will access the CCH and its Computerized Criminal History (CCH) Database through field devices rather than the desktop client, administrative staff and records departments need robust functionality and easy access to manage the criminal history records via their computers. The CCH client software provides that critical component of the CCH.

The CCH client is a module within the OpenFox Desktop, which provides a complete, user-friendly environment for client applications communicating with the OpenFox Message Switch System.

The applications executing within this environment are known as the OpenFox Desktop Product Suite.

Many times, installing remote client applications requires additional hardware servers and network

infrastructure at the central site. That is not the case for the OpenFox Desktop.

Support for Desktop is built directly into the OpenFox Message Switch, which allows administrators to manage the OpenFox Desktop using the same common configuration tools as the OpenFox Message Switch. That means both systems:

- Eliminate the need for multiple hardware systems and maintenance contracts;
- Eliminate the need to duplicate configuration records and synchronize disparate databases;
- Simplify the central site network architecture and the administrator's responsibilities; *and*
- Capitalize on the same High Availability as the OpenFox Message Switch.

Technical Information

Web Accessibility
To simplify and standardize the technology used

One of the biggest advantages of the OpenFox Desktop application environment to the security--aware law enforcement and public safety

community: support for the most current Internet standards.

This environment allows the OpenFox Desktop Product Suite applications to focus specifically on workflow, data path, and the end user experience. Applications need not implement redundant solutions to the same encryption, security, audit, and authentication concerns shared by all law enforcement or public safety applications, nor do they need to worry about manually installing updates, because these functionalities are already provided by the OpenFox Desktop.

Meeting Encryption and Security Requirements
To maintain best-in-class security protocols in sensitive communications

Desktop Product Suite applications work in cooperation with the OpenFox Message Switch to help agencies meet the CJIS Security Policy. OpenFox Desktop supports user and physical device identification. Desktop also supports advanced user authentication through the use of Password Tokens or other means.

The OpenFox Desktop application environment meets the latest encryption requirement by incorporating RSA encryption libraries for compliancy with FIPS 140-2 utilizing Advanced Encryption Standards (AES).

Automated Installs and Updates
To eliminate deployment issues

OpenFox Desktop leverages Java Web Start™ technology to support electronic application deployment via a web browser interface. In other words, there's nothing to install. If the user can use a web browser, they can use OpenFox Desktop.

Application Updates are released on the central site OpenFox Message Switch. From the end-user perspective, the initial installation and product updates are downloaded automatically when the application is launched – no manual labor required. This approach

eliminates the costly task of physical application deployment at all sites.

Common Look/Feel with Single Sign On
To ease training and usage by end-users

OpenFox Desktop Product Suite applications share the same operational functionality and the same flavor of data presentation. When a user is trained on one module, they can easily carry over their understanding to the other products.

The Desktop application environment similarly supports single user sign on. This avoids the need for users to sign onto each application or software function separately.

Control of Related Application Modules
To ease management by administrators

User access to the various applications in the OpenFox Desktop Product Suite is managed through the issuance of license product keys. This information is managed via the same tools as the OpenFox Message Switch.

Robust Communications Method
To ensure critical communications can be conducted reliably and efficiently

The Desktop application environment provides a common communication pathway to the OpenFox Message Switch. The communications pathway is an application-to-application TCP/IP protocol which supports self-monitoring, FIPS 140-2 encryption, dynamic encryption key exchange, guaranteed message delivery, and other law enforcement and public safety requirements.

Communications are lightweight, optimizing bandwidth. The communications protocol is designed to prevent lost messages.

For example, the CCH client can handle half-session failure where one side falls out of sync with another without losing information. It can then re-establish communication quickly.

Sharing Resources

To streamline resource consumption and make operation more efficient

The OpenFox Desktop Product Suite applications share a common set of XML-based resource

configurations. This eliminates the requirement to update code lists in each separate application. NCIC code lists and other resources are updated at the central site and are automatically made available to all applications; these resource lists are usually updated and maintained by the CPI Support Center.

CCH Client Forms

Users access the CCH Client for both data entry and consumption; they'll review, update and modify record entries as needed while performing in-depth searches and record maintenance. All of this happens through CCH Client Forms.

The CCH Client Forms are custom created through the use of the OpenFox™ Forms Configurator, another module in the OpenFox™ Desktop suite.

Using the Forms Configurator, rather than hardcoding forms, makes the creation of customized forms very easy and flexible, and ensures that users always have exactly the information they need to input or find right in front of them, with a minimum of effort. In addition, it makes it enhances maintainability of the system and eases the effort required to provide enhancements as requirements change in the future.

In the following section, we'll examine the most common forms in the CCH application. It should be noted that any of these forms can and will be customized based upon the requirements of any particular implementation.

In addition, and as can be seen throughout this section, the forms are referenced and accessed by tab. Each tab represents a unique functionality.

With all of the client forms and transactions, the timestamp and identity of the user making changes to a record are always captured and made available in an activity log for tracking and reporting purposes.

Using the Forms Configurator makes the creation of customized forms very easy and flexible, and ensures that users always have exactly the information they need to input or find right in front of them, with a minimum of effort.

Identification Tab

The IDENTIFICATION tab form provides access to the base demographic subject identification and demographic details in the subject's record.

Data elements managed in this form include the base record, or primary identity values, for the subject's name, date of birth, height, weight, sex, and other typical person identification descriptors.

The operator can utilize this function to create, update, or delete a subject record in the CCH database.

The fields on this form are basically a view of the identification segment or table(s) in the database. Diagrams of these tables are provided in Chapter 2; the ident table is identified as table #1 in Figure 3.

Figure 34. Identification Tab

Arrest Event Tab

The Arrest Event tab form provides visibility and access to the data elements in the arrest segment table(s) in the CCH database.

This form is used to create, update, and display the arrest information that makes up the arrest cycle

events in the subject's criminal history. It provides access and visibility to the event occurrence data elements, including the arresting officer, date of the event, name, and date of birth used by the subject in the selected event, and other information that defines the event occurrence.

The form organizes the display and access to the arrest event information into two sections. The top section in the form is used to display several key data elements of the arrest events in the subject record. These are displayed in a tabular form for user convenience as a method to view all the captured arrest events.

The user can select an event to display in the lower section of the form for update. Changes and edits are applied to the data elements displayed in the lower section of the form and then saved into the database.

Figure 35. Arrest Event Tab

Arrest Charges Tab

A secondary Arrest Charges tab is also used to manage arrest events. This one focuses on the substance of the arrest event, including the charge details, offense, charge code, charge type, the number of counts, classification, and case number information.

Figure 36. Arrest Charges Tab

Custody Tab

The Custody or Commitment tab form is used to manage the information about the subject's incarceration and events that occur in the custody environment.

This information includes prison identification, the subject's inmate identifier, and details about parole and incarceration start and release dates.

Figure 37. Custody Tab

Prosecution Tab

The prosecution tab contains the list of prosecution charges pertaining to the selected arrest event.

Figure 38. Prosecution Tab

Disposition Tab

The Disposition tab form is used to manage the details of dispositions obtained from the various judiciaries responsible for handling the charged arrest events.

This transaction form provides the user access to the data elements in the disposition segment in the database. Event, charge, and disposition details can be created, updated, and displayed using this form.

Court findings, pleas, sentencing details, and information identifying the court of jurisdiction and case details are managed through the disposition transaction form.

Figure 39. Disposition Tab

Applicant Tab

Most state-level CCH implementations must include some processing and data management functionality specifically to support applicant processing, e.g. job applicants or those wishing to purchase firearms.

It's a realistic expectation, given the increasing emphasis on background and other checks on people applying for jobs that have some contact with children, such as school teachers, bus drivers, custodial support in schools, and even volunteers

working in school and sports programs. Private sector employers are also requiring more background checks as part of the normal applicant screening process.

The APPLICANT-specific form and data elements in the database provide data capture, name only and fingerprint-supported checks in the CCH and ABIS to support the Applicant Flow functionality.

Figure 40. Applicant Tab

Simplicity is the ultimate form of sophistication.

Leonardo Da Vinci,
Artist and Inventor

Truth is ever to be found in the simplicity of things.

Isaac Newton,
Mathematician

Alias Tab (Supplemental Data)

The CCH database includes robust support for supplemental data that can include names, dates of birth, other numeric identifiers, social security numbers, occupations, and addresses.

This supplemental data is important and useful in the subject identification process as a person's criminal history is extended to capture and manage multiple arrest events.

Figure 41. Alias Tab

Search Tab

An identification search can be conducted by selecting one or more of the criteria listed below, in flexible combinations:

- SID number
- FBI number
- Social Security Number (SSN)
- Date of Birth (DOB)
- Last Name
- First Name
- OCN/TCN
- OCA
- Document Number
- Court Case Number

- Arresting County
- SOR SHP#

The "SEARCH" button is used to submit the search.

If only one record State Identification Number (SID) is returned from the exact search, the Identification screen, Criminal History screen, and Fingerprint History screen will be automatically populated using the record SID.

If multiple records are returned from the search, they are returned on the Identification screen. The records are sorted by Last Name, First Name and

Middle Name, where the user can review them one by one. When the operator selects a record from the list the detail information will be populated.

Figure 42. Search Tab

Client-Database Transactions

The interface between the client application and the database is managed through an OpenFox Interface Program. These transactions are described below; they are exchanged through the message switch and are treated by the routing, logging, and other switch functions as a message.

The example transactions shown below represent the XML formatted transactions that provide the functionality indicated in the name of the transaction.

LoadRequest Transaction

The LoadRequest is used to retrieve a particular record data into the GUI screen. It is generated in the client, sent to the database, and will result in the return of a record from the database to the client for display, update, and other operations.

LoadResponse Transaction

The LoadResponse Transaction is generated by the database application to transfer record data into the GUI screen for display, update or other operations.

LockRequest and LockResponse Transactions

The Lock Transactions are generated in the database to be delivered to the client after setting the lock flag to prevent simultaneous updates from occurring.

ModifyRequest and ModifyResponse Transactions

The Modify Transactions are generated as an acknowledgement to the client application verifying that the change and been recorded and saved. As can be seen below the "lock" flag has also been reset.

NewRecordRequest and NewRecordResponse Transactions

The NewRecordRequest Transaction is generated in the client software when the user wishes to create a new record. The NewRecordResponse Transaction is generated by the database application to signify to the client software that a new record has been created and saved.

Search Request Transaction

The SearchRequest Transaction is utilized by the user to search the database which if found will return the record contents back to the client screen.

8. Reports

If disseminations (see Chapter 5) include, and are based on, content drawn from specific criminal histories, reports present historical and statistical information based on counts of different types of records and data.

For most state agencies and records departments, these reports provide crucial information to operations: they're the source of the state's statistical data that may be required to be produced under state or federal regulations, or may be used upon request by prosecutors or legislators considering policy and legislative changes. For example, users might want to review summaries of the number of offenses in a particular month, or the number of violations or charges of a certain characteristic or variety for a particular time period. Records divisions can also use reports to help with record maintenance and upkeep.

CCH reports are all generated via the CCH client and includes powerful customization options. The OpenFox CCH reporting capabilities include standard SQL scripts, stored procedures, and – for presentation quality reports – Jasper Reports. Jasper Reports is a widely-used Java tool that has a flexible and powerful GUI report generation tool and an execution environment to manage report scheduling and execution. Additionally, reports can be created using T-SQL in SQL Server, or PL/SQL in Oracle, or other reporting toolset, unless otherwise noted.

Users can select reports from a screen; there, the user can additionally set search and input parameters, such as beginning and ending dates, or parameters to limit the return of information based on agency, time period, etc. In this way, users can flexibly create ad hoc reports by "slicing-and-dicing" multiple data points contained in the system.

The reports can also be set up to automatically schedule, queue and report on job progress for each report desired. Intervals for printing can be designated by the operator and changed as desired.

A brief selection of example reports is identified below with a brief description of their function. Many more reports are available in the system, and reports can be custom-built to capture and communicate any data resident in the CCH/CCH system.

CCH Record Maintenance Reports

Status Request for Open Court Dispositions

This report will provide a listing of the courts where the dispositions have been open for more than 3 years, indicating dispositions that may be open in error if the court system and the CCH database have fallen out of sync. Staff working with the court

CCH Deleted Records

This report will provide a listing of records that have been deleted from the CCH database. By identifying

organization would use this information to (1) identify dispositions that may be open in error, (2) determine why the disposition remains open (for example, the court system and the CCH database may have fallen out of sync) and (3) take remedial action. The operator will have the ability to run this report for all courts, specific courts by ORI or for dispositions that are open less than 3 years

date of deletion and the administrator's identity, it allows state organizations to maintain accountability, create an audit trail for system usage, and double-check for errors.

Criminal History Report

Deleted Records

SID	Date Deleted	Deleted By
S393039301	20100908	MARIA
M1488614	20100913	MARIA
M1483930	20100913	MARIA
M3908614	20100913	MARIA
M1393014	20100913	TESTER1
M1879614	20100913	TESTER1
M4488631	20100913	TESTER1

Figure 43

Message Counts and III Transaction Audits

The information for the Daily Message Counts and Audit of III Transactions will be retrievable from more than one source.

Since the OpenFox message gateway and the Criminal History Record Information System will be interfaced via an OpenFox interface program, all transactions sent to the Criminal History

The application will be recorded within the OpenFox message Switch. The statistical information

provided by the system can provide daily, monthly and annual counts, by transaction, for a particular

station. These reports can be printed daily or as desired.

Dissemination Reports

Typically used for internal audits, these reports can provide official documentation of CCH records for use internally or distribution to the public, when

appropriate. For example, the excerpt from a sample dissemination report below (Figure 44) indicates that the given subject has no criminal history data in the CCH.

Figure 44

Figure 45

Billing Reports

Typically used to detail billing information and/or get detail information on types of searches being run etc. For example, the System Search Type Totals report

shown below can be used by administrators to understand what types of, and how many, searches are being run on their system for a given time frame.

Totals By Search Type

From: 20220201   Through: 20220731

Search Type:	Total Requests:
FBI Only Searches	779
Classified	643
Certified Teacher	811
Nursing Home	145
Criminal Justice Investigation	2
Employment/Governors Office	1
Minors	95
Private Investigator	9
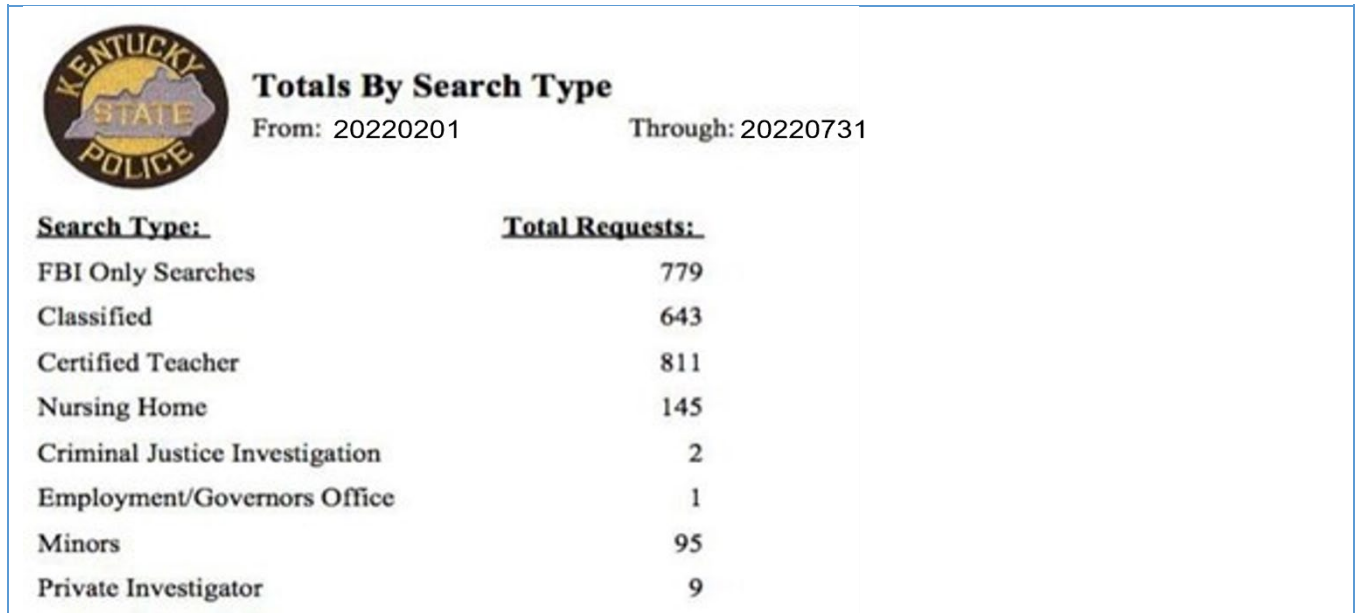
Figure 46

9. Batch Functions

The OpenFox CCH includes several methods and implementation approaches for managing the submission and processing of transactions in large batches. This batch processing allows state agencies to process enormous amounts of information in time- and resource-efficient ways without compromising use of the system by personnel in the field for whom it is critical to access criminal history information in real-time.

For example, a state's Department of Motor Vehicles might need to send queries on all users whose vehicle registration renewals upcoming. That list could contain anywhere from hundreds to millions of individuals, all of whom would be collected in a batch file and then sent to the state's Computerized Criminal History (CCH) system, where it would be picked apart for individual queries to be run.

However, at the same time that a batch file is running, an officer in the field might need to run a criminal history query. The CCH is designed to deftly handle these situations simultaneously; because the batch file would be processed in non-real-time, the officer's request would be prioritized and interspersed with the batch file to minimize the bottleneck for real-time users.

By batching these individuals, the information can be communicated and processed in a more efficient manner with fewer delays and less resource consumption.

Processing Overview:

The preferred method for handling batch functions is described below.

The originating application creates a sequential, ASCII, fixed format file in which each line contains a single transaction; lines are delimited by CRLF or LF characters. The transaction format can be either NCIC format or simple fixed format data elements.

The transaction input files will be named [function_name][date as yyyymmdd][time as hh24mmss.dat]. Each file will be deposited in the specified directory on the OpenFox Message Switch system. The submitting system will copy the file to the receiving directory or upload it via FTP. Once the file transfer is complete, the submitting application will

Responses from the OpenFox to the submitted transactions, if required, will be sent by the message switch as an AM type message to a specified

deposit another file in the same directory with the same filename but with an. rdy extension rather than the .dat extension that is specified for the data file.

The OpenFox interface managing this exchange will poll the specified input directory searching for files with the .rdy extension. When such a file is found, the Interface will open the associated .dat file, process each row (line) as required to prepare it for submission to the OpenFox Message processing functions, submit the transaction, and then move both processed input files from the input directory to the processed directory. The processed directory contents will be deleted weekly – or in a period appropriate to the traffic and available space.

addressable endpoint (station). Optionally some other form of response handling may be defined in project discovery.
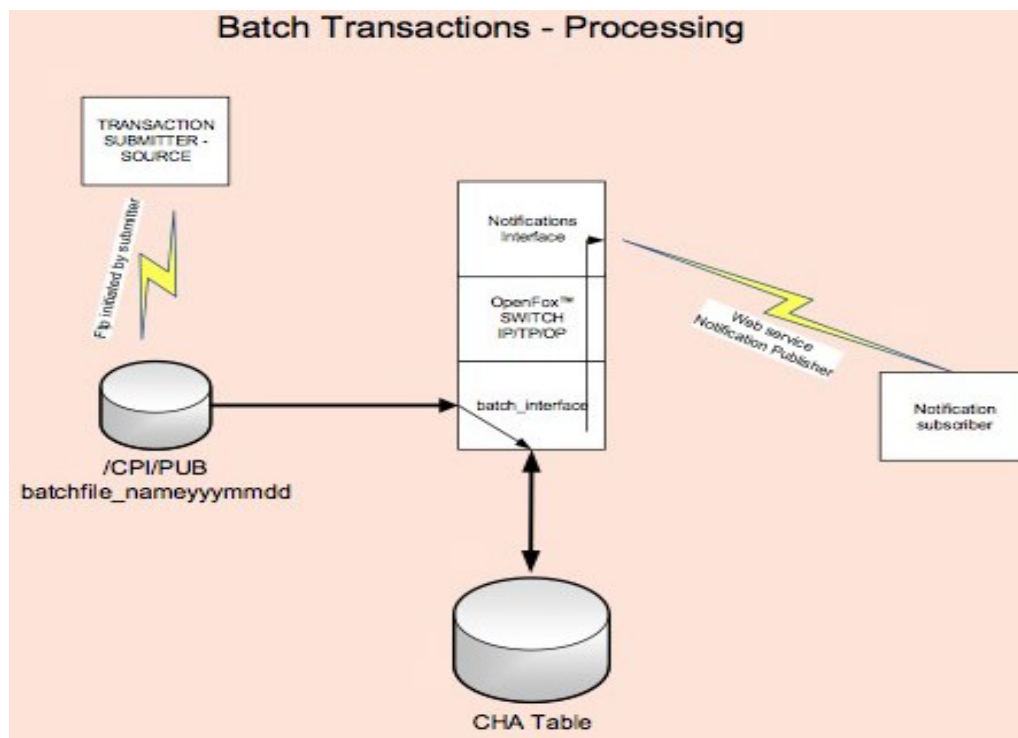
Figure 47

10. *The CCH, III and* NFF

The CCH provides support for Interstate Identification Index (III, also known as "Triple I") functions, including National Fingerprint File (NFF) extensions. Maintained by the FBI at the National Crime Information Center (NCIC), III is a national index of criminal histories that can be accessed and updated by law enforcement personnel and analysts nationwide.

Specifically, the III segment of the Integrated Automated Fingerprint Identification System (IAFIS) is the national system designed to provide automated Criminal History Record Information (CHRI). Specifically, the III stores the CHRI of federal offenders and those offenders established by participating and non-participating III states.

With access to information procured from other states and municipalities, law enforcement agencies can better identify suspects who may be wanted for, or who have been convicted of, crimes committed in other regions. Similarly, III makes comprehensive, nationwide information available on applicant background checks. OpenFox CCH provides full support for the critical information-sharing capabilities of III.

III houses absolutely critical information, and communications with it *must* work perfectly. That's where the CCH plays a key role.

Each III record is created through the submission of fingerprint images to IABIS. The states participating in III establish and update records within III through the submission of first and subsequent fingerprint images of arrested subjects. Once these records are established, the III participating states provide requested criminal history records whenever an electronic inquiry for a state-maintained record is processed by the III system.

In other words, a given user might want information like criminal history but may not know which state holds that information; he or she can instead query III to identify which state(s) hold criminal records for the individual in question.

NFF extends the functionality of III by integrating fingerprint information into the system. The relationships between systems like the CCH, III, NFF, and any idiosyncratic systems various states use can obviously be technically complex. Communicating this information requires many different programming languages and communication protocols to work together; and it must all be done securely, safely, and reliably without losing any information. Failed communications could mean letting a seemingly simple traffic stop go because his extensive criminal record and warrants didn't get accurately communicated. III houses absolutely critical information, and communications with it *must* work perfectly. That's where the CCH plays a key role, as we will explore in this chapter.

Key ABIS services include:

Fingerprint Identification Services

Criminal Ten-Print Fingerprint Submission

These fingerprints are acquired due to an arrest at the city, county, or state level. The fingerprints are first processed locally; then, they are forwarded electronically to a state or other federal agency system for processing. The fingerprints are finally electronically forwarded through the OIS Wide Area Network (WAN) to the FBI's IABIS for processing. Mailed ten-print fingerprint cards are converted to an electronic format for processing in the ABIS environment.

Civil Ten-Print Fingerprint Submission

Fingerprints are acquired related to a background check for employment, licensing, and other non-criminal justice purposes where authorized by federal and state law and in compliance with appropriate regulations. Like criminal fingerprints, civil fingerprints are processed by local, state or other federal agencies.

Latent Fingerprint Services

The ABIS supports both electronic and hard copy submissions of latent fingerprints, or prints not visible to the naked eye but that are both present and retrievable. Latent fingerprint specialists return decisions to the requestor and add any unidentified latent fingerprints and their features to the unsolved latent fingerprint file.

Subject Search and Criminal History Services

States participating in III as National Fingerprint File (NFF) participants submit only the first arrest fingerprint images on a subject to establish a pointer record within the III segment. Any subsequent activity related to this NFF pointer record will be the sole responsibility of the NFF participating state. If a direct terminal inquiry or an IABIS fingerprint inquiry identifies a person with a criminal history in one or more NFF participating states, a criminal History Request is forwarded to the participating NFF state's criminal history system for the appropriate response.

NFF Transaction Changes – Message Key Exchanges (MKEs)

Communications with III are transactional in nature, each with a message key that describes what kind of transaction it is (message, modify, query, etc.) and what kind of response is required. The CCH is designed to handle these communications efficiently with robust protections against message failures and flexible options for users to manage the message

transactions. See the discussion of the OpenFox Message Switch in Chapter 1 for more information.

Standard Transactions

The CCH provides processing associated with the following message keys:

MKE	Type	Description	Processed by
QH	Query	Query Index	CCH programmed response
QR	Query	Query Record	CCH programmed response
QWI(processed as QH)	Query	Query Wanted Person	CCH programmed response
ZR	Query	Record Maintenance Query	Generated from CCH transaction screen
ZI	Query	Record Maintenance Query	Generated from CCH transaction screen
ZRS	Query	Record Maintenance Query	Generated from CCH transaction screen
MRS	Update	Modify Record SID	Generated from CCH transaction screen
EHN	Enter	Enter Supplemental Identifiers	Generated from CCH transaction screen and/or CCH program logic
XHN	Cancel	Cancel Supplemental Identifiers	Generated from CCH transaction screen and/or CCH program logic
DRS	Update	Delete Record SID	Generated from CCH transaction screen and/or CCH program logic
DEC	Update	Deceased Records Indexed in the III	Generated from CCH transaction screen and/or CCH program logic
CPI	Update	Notify FBI when a subsequent Criminal Ten Print is Identified	Not Processed

Table 6

Inquiries into the Criminal History are routed through the OpenFox Message Switch to the CCH Interface and then to the CCH database processing for execution and generation of the appropriate response.

The QH ("Query Index") inquiry searches for the individuals' personal identifiers and is used to determine an Index into the III.

A positive response will result in either a single or multiple matching III record response (max 15) or a "no record" response.

Purpose Codes will comply with NCIC requirements.

CODE	Description
A	Administrative File Maintenance
C	Criminal Justice
D	Domestic Violence and Stalking
F	Weapons Related Background Checks
H	Housing
I	Interstate Approved Non-Criminal Justice
J	Criminal Justice Employment
S	National Security
V	Visa Applicants
X	Exigent Procedures

Table 7

$.A. Messages and Transactions

Following is a table depicting available $.A transactions (those that indicate specific actions to be taken) with a description of the transaction and the system action to be taken. In general, $.A. messages are received from the NCIC III service and are forwarded to the CCH by the OpenFox Message Switch for processing.

As can be seen in the table below, not all $.A. messages are supported, in which case they are reported as errors in the Message Switch and are dealt with manually.

MKE	Type	Description	Action to be Taken
$.A.CHR	Update	Criminal History Request Notification	Sent to CCH by OpenFox for programmed processing
$.A.NPR	Update	No Prior Record – NCIC III Record Established	Sent to CCH by OpenFox for programmed processing

MKE	Type	Description	Action to be Taken
$.A.RNP	Update	SID Rejected-No Prior NCIC III Record	Logged and reported on Exception report by OpenFox Message Switch - for review
$.A.PIR	Update	Prior Record-SID Number Entered in NCIC III Record	Sent to CCH by OpenFox for programmed processing
$.A.RPR	Update	SID Rejected-Prior NCIC III Record	Sent to CCH by OpenFox for programmed processing
$.A.SSO	Update	Single Source Offender Status	Sent to CCH by OpenFox for programmed processing
$.A.MSO	Update	Multi-Source Offender Status	Sent to CCH by OpenFox for programmed processing
$.A.EXP	Update	FBI Number Expunged	Logged and reported on Exception report by OpenFox Message Switch - for review
$.A.EXS	Update	SID Number Expunged	Logged and reported on Exception report by OpenFox Message Switch - for review
$.A.REA	Update	Reactivation Message after 30 days of DRS receipt	Logged and reported on Exception report by OpenFox Message Switch - for review
$.A.DEC	Update	Deceased-SID Number Retired	Sent to CCH by OpenFox for programmed processing
$.A.CON	Update	FBI Number Consolidation	Logged and reported on Exception report by OpenFox Message Switch - for review
$.A.NMS	Update	Applicant Fingerprint submissions not identified	Logged and reported on Exception report by OpenFox Message Switch - for review
$.A.CFN	Update	Applicant Fingerprint Submission Identified	Logged and reported on Exception report by OpenFox Message Switch - for review

MKE	Type	Description	Action to be Taken
$.A.CFR	Update	Applicant Fingerprint Submissions Identified	Logged and reported on Exception report by OpenFox Message Switch - for review
$.A.PES	Update	Advise NFF State of Erroneous Single-Source Submission	Logged and reported on Exception report by OpenFox Message Switch - for review
$.A.PEM.	Update	Advise NFF State of Erroneous Multi-Source Submission	Logged and reported on Exception report by OpenFox Message Switch - for review
$.A.FNC	Update	FBI Number Change	Sent to CCH by OpenFox for programmed processing
$.A.NAC	Update	Fingerprint No Longer Approximate	Logged and reported on Exception report by OpenFox Message Switch - for review
$.A.AFC	Update	Approximate Fingerprint Classification	Logged and reported on Exception report by OpenFox Message Switch - for review
$.A.FCC	Update	Fingerprint Class Changed	Logged and reported on Exception report by OpenFox Message Switch - for review

Table 8

For a brief example of how these transactions can work, consider the following.

MKE/$A.NPR

When the FBI does not identify ("non-idents") an NFF state's ten-print submission with an existing criminal record, the FBI will send a $.A.NPR message to the state and include the ORI of each agency (contributor and/or any designated agency) that indicated a reply was desired.[2]

---

[2] For NFF states, the $.A.NPR message has been expanded to include a maximum of 13 ORls to which a copy may be sent. If no "send copy to" ORls are listed on the fingerprint submission, the NFF states $.A.NPR message will end with the period after the word ESTABLISHED.

$.A.NPR.SID/FLO *1776048.FBI/9003000.0Rl/FL02001 OO.OAN/DEP*ARTMENT OF PUBLIC SAFETY

OACIQUINCY.OCA/A-3870189S.NAM/PUBLIC,SUSIE
Q.S EX/F.
RAC/W.DOBI19S70812.FPCI.DOAI 19991208.NO PRlOR RECORD - NCIC III
RECORD ESTABLISHED .*ORl/FL0200* 1
OO,FL0200000,FL0200200,FL020 1 *OSA,*
FL0200 1 *SG,FL0200300*

MKE/CPI

When a second and/or subsequent criminal fingerprint submission is identified with an indexed record by a NFF state, the state shall send an electronic Criminal Print Ident (CPI[3]) message to the FBI, no later than 24 hours after the arrest is posted within the state's central criminal history record system.

MKE/$A.PES PEM

When an NFF state bureau submits a criminal ten print to the FBI's CJIS Division that is identified with

the state's NFF record and the SID on the card is the same as the SID indexed in the NFF record, the CJIS Division destroys the ten print and sends to the state one of the following $.A. messages: $.A.PES or $.A.PEM.

These messages advise the state that its SID is already established in the III and indicates by message type whether the record is single-source ($.A.PES) or multi-source ($.A.PEM).

If necessary, these messages may be expanded to identify any agency (maximum of 13) for which a reply is needed.

Status Messages

The following table offers a list of status messages. These messages will be automatically processed by the OpenFox Message Switch, and the action taken is dependent upon the configuration of the message in the Message Switch system.

For example, if the $.U. transaction (MKE) is configured to set III down then any transactions received after the $.U. will be queued in the NCIC queue, held in a hold queue to be released when III comes back up or rejected depending upon the configuration of the message key.

MKE	Type	Description	Action to be Taken
$.U.	Status	NCIC III File Out of Service	OpenFox Message Switch - configurable
$.V.	Status	NCIC III File in Full Service	OpenFox Message Switch - configurable
$.W.	Status	NCIC III File in Restricted Service	OpenFox Message Switch - configurable
$.X.	Status	NCIC III File Continuing Restricted Service	OpenFox Message Switch - configurable
$.Y.	Status	NCIC Line Reopened-NCIC Restricted Service/III Full Service	OpenFox Message Switch - configurable
$.Z.	Status	NCIC Line Reopened-NCIC Full Service/III restricted Service	OpenFox Message Switch - configurable

Table 9

---

[3] Not to be confused with Computer Projects of Illinois, Inc.

File Maintenance Messages

The following maintenance messages are generated by the CCH; they may be sent or executed manually depending upon the circumstances.

MRS Modify Record

The MRS transaction is used to add a SID, modify an incorrect SID, or modify a SID to an FBI pointer.

- The MRS is used to add a SID when the user wants to assume responsibility for a record initially created with an FBI pointer or when a SID was rejected.

- The MRS to modify a SID is used to correct a SID that is not correct in a particular record but has been accepted in III.

- The MRS to modify a SID to an FBI pointer is used if the record cannot be supported in the state CCH but can be disseminated by III.

EHN Enter Supplemental

The EHN transaction is used to enter supplemental information such as aliases and additional dates of birth that were not entered in the initial record submission and creation.

XHN Cancel Supplemental

The XHN transaction is used to cancel specific supplemental information from a Single Source record.

DRS Cancel Record

The DRS transaction removes a SID from III because the record has been expunged or purged from the state CCH database.

QH Personal Identifier Query

The QH transaction is used to search by personal identifiers, SID, or FBI number and obtain a list of records that match the criteria. The response will include the name, personal descriptors, identify the database containing the record, and information useful in obtaining the record detail for a specified record. While this is a query rather than an update, it is frequently used to gather information in the course of file maintenance processing.

QR Criminal History Record Request

The QR transaction requests a criminal history record by specifying a SID or FBI number as the retrieval criteria. QRs made by in-state agencies are not normally forwarded to the III if the record is maintained by the state of residence (single source record). However, there is an exception if a federal agency is the requestor. While this is a query rather than an update, it is frequently used to gather information in the course of file maintenance processing.

DEC Deceased Subject

The DEC transaction is sent to III to flag a record subject as deceased in III. This maintenance message must contain either the XPL (reporting subject as deceased) or the FII (death is substantiated with cadaver prints).

Administrative Messages

The following messages are used by administrators and staff to facilitate and manage the III and CCH synchronization process.

QR - PUR A and I

PUR A - this form of the QR transaction is used to retrieve record content that is in III for a State record. This is used for review and comparison against the record contents in the state CCH database. Proper authorization and ORI usage must be established to execute this transaction.

PUR I - identification must be made at the state level prior to requesting the record using the authorized ORI number.

ZR Record Inquiry

The ZR transaction is used to determine if a specified record exists in III.

ZI Administrative Inquiry

The ZI administrative query is used to retrieve the following information from III:

- If III has a SID or FBI pointer for a specified record; and the date the SID or FBI pointer was entered into III.

- If a specified record is Single Source, Multi Source, contains a sex offender or wanted person pointer.

    o The status of the IFFS IFS flag and Record Sealing Flag.

    o The date the record was established in III.

    o The date the specified record was last updated.

    o Identifiers including SMT,SOC,DOB,MIS

ZRS Status Verification

ZRS is used to verify record status in the III. After sending an accept message, the appropriate $.A.SSO or $.A.MSO will be transmitted.

CCH Interface Messages – Transaction Requirements

When interfacing with III and NFF via CCH, the user must input certain data points. Below are some of the most common interface functions, followed by the data which must be entered as well as the data expected to be returned to the user:

Data Requirements and Responses:

Search the CCH by Name and Date of Birth (DOB)

- Data entered: Name and DOB
- Data expected: Name, DOB and SID

Search the CCH by SID

- Data entered: SID
- Data expected: FBI Number and III Flag

Enter a New CCH Record

- Data entered:

    o Name, Sex, Race, DOB, Stats (Adult, Juvenile, Police App)

- o Height, Weight, Hair Color, Eye Color, SOC, FBI, AKA's
- o Address (Street, City, State, Zip), Place of Birth, SMT's
- o Fingerprint codes (A,B,C) (10, one for each finger)
- o Charge Information (described in #5 below)
- o OR - Court Segment (if from a court)

- Data expected: SUCCEED or FAILURE (any type of generic Positive or Negative response)

Add Additional Charges

- Data entered:

  - o ORI, Date of Arrest, Originating Case Number, Arrested as (Name, Sex, Race, DOB)
  - o Charge Number, Statute, Literal, Severity, Counts, NCIC Code, Fingerprint Number

- Data expected: SUCCEED or FAILURE (any type of generic Positive or Negative response)

Add Additional Court Dispositions

- Data entered:

  - o ORI, Date of Arrest, Originating Case Number
  - o Charge Number, Literal, Severity, Counts, NCIC Code, Fingerprint Number
  - o Court ORI, Case Number, Convicted (always Y for me), Court Literal
  - o Minimum Sentence, Maximum Sentence

- Data expected: SUCCEED or FAILURE(any type of generic Positive or Negative response)

Add Additional Demographic Information

- Data entered:

  - o SMT's
  - o AKA's
  - o DOB's
  - o SOC's
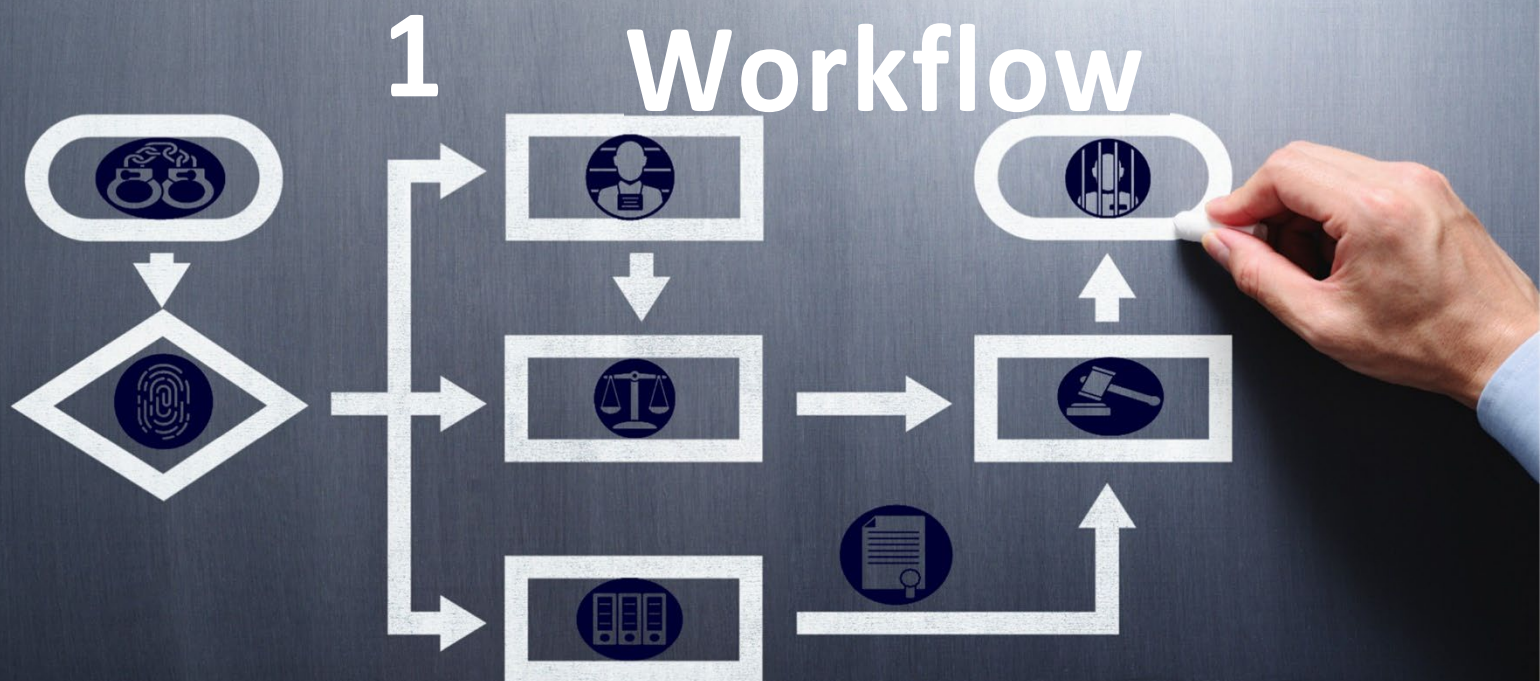
1   Workflow

The OpenFox CCH offers powerful capabilities to help users manage workflow. The CCH is specifically designed and implemented to ensure processing efficiency and to improve decision-making via business rule implementation.

Business Rule Definition and Implementation

In the course of executing a transaction, many conditions and situations require review and decision input from administrators or other users. The CCH emphasizes processing functions that facilitate workflow management, and programmed business rule implementation provides the most effective and efficient approach to handling many exceptions and processing decisions.

OpenFox Interceptor Application

The OpenFox Interceptor Application is an OpenFox Message Switch Application that is configured to accept input transactions, hold them in a queue, provide authorized access to the queued work steps, and then to route and process them as appropriate.

For example, if a data anomaly produces an exception that cannot be automatically resolved, the underlying transaction will be sent to the Interceptor queue for review by an operator. From there, the operator can research the problem and either resolve it or mark it as failed. The operator can then send the transaction forward or to error processing.

The Interceptor supports multiple concurrent access by multiple staff members to the queued work for efficiency.

The OpenFox CCH Client

The CCH Client provides access to a database table, or queue, which holds transaction flow and processing information much like the Interceptor capability.

The CCH Client provides access to the queue at a client tab or screen for review and status or action updates (see Chapter 6 for more information). In this case, the CCH Client will update the database queue, and the process in the database will react to the updated status as appropriate in the subsequent execution flow. In other words, once the exception is addressed, the system will continue working as it should.

> ## The CCH emphasizes processing functions that facilitate workflow management, and the most effective and efficient approach to handling many exceptions and processing decisions.

The CCH Client and database support multiple queues and operators controlled by roles and permissions.

For example, a Court Disposition might be received but cannot be programmatically matched to the correct Arrest record. Some agencies might wish the process of identifying and updating the correct record to be handled manually rather than automatically.

This capability is detailed below. The screen shot below (Figure 48) shows the "Disposition Hold Queue." The panel at the top of the screen shows the various entries in the queue and the bottom part of the screen shows the Court Charges detail on the left and the Arrest record charges on the right that are associated with the record selected or highlighted in the top of the screen..

Figure 48

The actions that a user may perform on a charge are listed under the "Actions" menu in the upper left-hand corner of the Details Window. Selected actions will also be available on the window toolbar and as buttons located at the very bottom of the window. All of the possible actions will be listed under the "Actions" menu. An example screen shot of the "Actions" menu is shown in Figure 49 and described in Table 10:
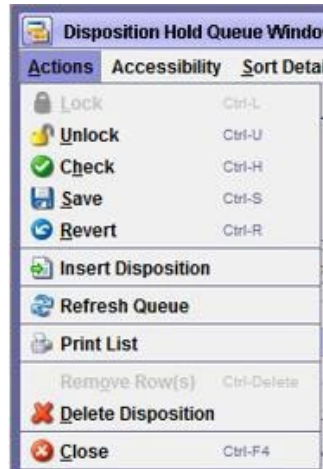
Figure 49

Action	Description
Lock	This action will attempt to lock the highlighted record for editing. Note: If the selected record does not have a matching Arrest charge, the button is disabled.
Unlock	This action will release the edit lock on the highlighted record
Check	This action will perform all client side field validations
Save	This action will attempt to save the record to the main database table.
Revert	This action will cancel any changes made to the record by this user, and it will revert the record back to its previous state.
Insert Disposition	This action will insert the court charge disposition record into the criminal history database.
Refresh Queue	This action refreshes the queue.
Print List	This action will print the list of records in the Details Window
Remove Row(s)	This action will remove any highlighted records from the list of records in the Details Window.
Delete Disposition	This action will remove the highlighted record from the disposition hold queue database table.
Close	This action will close the Details Window.

Table 10

12. Notifications *and* Subscription Services

The CCH can be used to alert users automatically to activity in the Computer Criminal History () database.

For example, we have discussed the powerful RapBack functionality. A daycare might use the RapBack function to monitor the criminal histories of employees: if a daycare teacher were to be arrested, with RapBack the daycare could be notified automatically rather than waiting until it manually runs a report on their staff each year. Alternatively, a detective investigating a case may be notified any time a particular suspect's record is altered.

RapBack is a specialized example of a notification. A notification is an event report or an informational message based on a specific trigger. When an arrest or disposition is added to the criminal history information, a notification is sent to the subscribing user or agency.

Notifications can be customized to a granular level to alert users whenever a particular transaction is executed or whenever some particular data has changed. In that case, it's called a subscription, a special class of *ad hoc* notification, and users can subscribe or unsubscribe to specific events as needed. Notifications are built into the system and are always available to users.

How It Works

A user or cooperating application must register with the OpenFox Subscription Service to receive event notifications and transactions for specified conditions/events that occur in the database processing functions of the CCH.

Users can use the OpenFox Subscription Application to ENTER, UPDATE, DELETE, and QUERY event subscriptions in the OpenFox Message Switch environment. The application manages subscriptions and events in a set of database objects utilizing message switch transactions, procedure language code elements, and SQL statements.

Architecture

Figure 50 provides a simple, high-level look at notification and subscription-event management.

OpenFox Subscription-Event Management

USER

USER

USER

OpenFox
Message
Switch

OpenFox
TRANSACTIONS TO
ENTER, NODIFY,
QUERY, DELETE
SUBSCRIPTIONS AND
EVENT DEFINITIONS

CCH

SUBSCRIBE_EVENT
OBJECTS

○ Event trigger function points
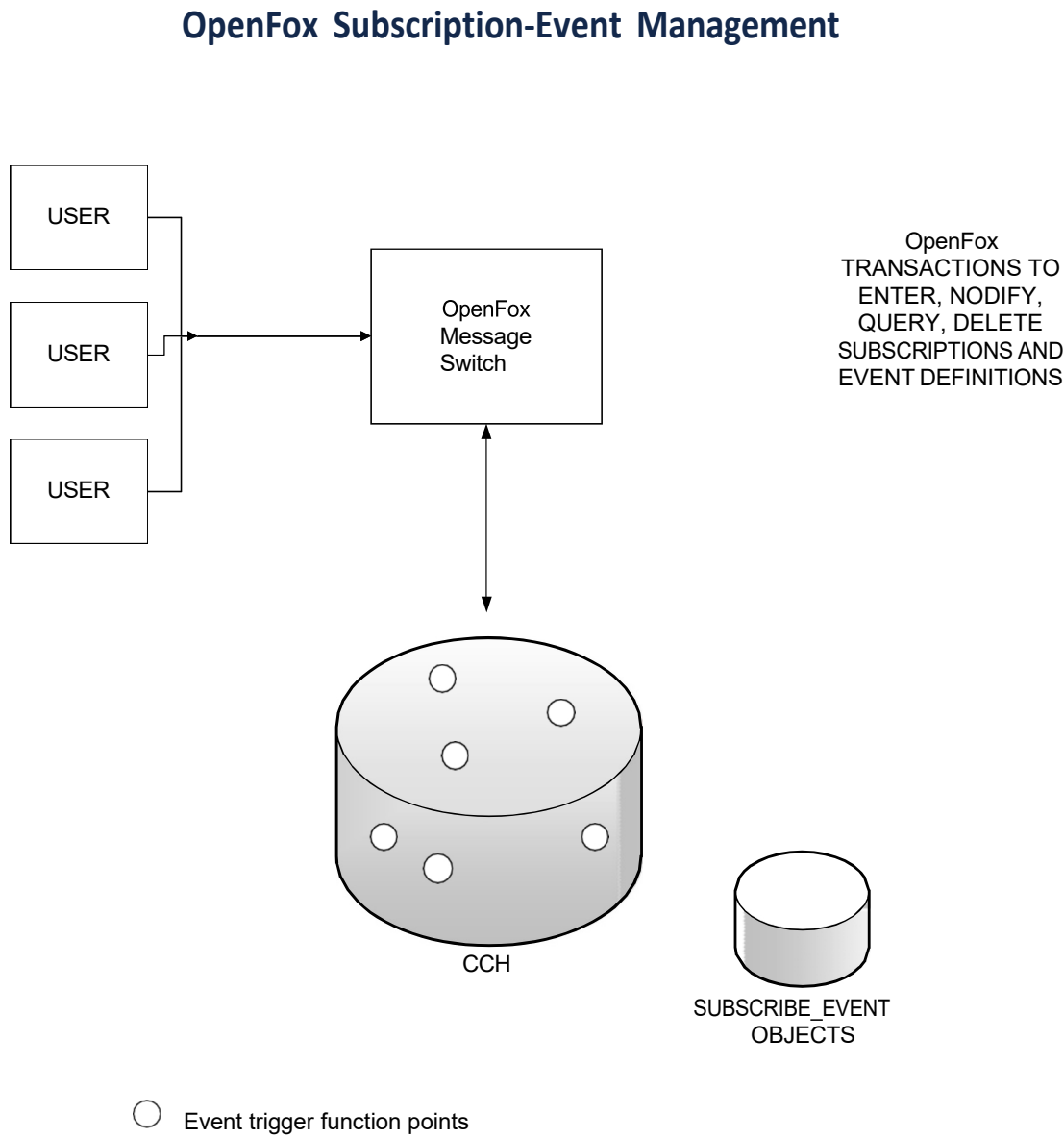
Figure 50

Simply stated, many different types of action in the CCH operation (an event) can be designated to trigger a notification function. Changes that result in a status change in the record or the addition of an arrest are most frequently defined as trigger events. The OpenFox Message Switch communicates back and forth between users and the CCH/CCH to create,

modify, monitor, and produce notifications whenever the triggering event occurs.

Messages and transactions to users and cooperating applications are generated in the database processing to report status, process events, and to execute message switch transactions. These messages must be sent to the OpenFox Message Switch for editing, routing, and delivery to the destination specified.

The CCH database enables a "message send" functionality that queries a table in the database identifying subscriptions to any given event; if such a subscription is identified, the "message send" function will generate an unsolicited, asynchronous (one-way) message via the message gateway.

Subscription Event Tasks

As ad hoc notifications, subscriptions must be created by users or administrators. The basic tasks that comprise an event subscription include the following:

1: Create an event

This is typically some executable code such as a database script, program, or statement. The event is defined by the executable code and the call sequence required to trigger the event. The events typically include operations, record state changes, etc. that occur during the processing of transactions in the message switch environment. Events are defined by the customer and CPI during the project discovery and as an ongoing maintenance activity; CPI will perform the actual database coding activity.

Users define or identify the call sequence that triggers the event notification process in the subscribe-event application. The specifics are configured and coded in the transaction processing workflow as required. Each workflow point has an associated or attached event that will, when executed, examine the event table and subscription table to determine whether or not any user(s) have

subscribed for an action at the trigger point. The action will usually be implemented as a notification message.

In other words, users can easily create a custom subscription event; every time that event happens, the system is configured to determine if anyone has subscribed to that event. If so, a notification is produced.

2: Subscribe

The user must subscribe to receive a notification, or to execute some specified action, when the particular event occurs.

The user or system administrator can execute a query to determine what trigger events have been created and registered in the application. The response includes a list of event identification, description, and several other pertinent details about available events. The response can be reviewed and the appropriate event, or events, can be subscribed by entering the appropriate transaction as described in the transaction section of the document.

3: Capture and Record Events

The events and notifications are captured and logged in a history table that can be used for reporting and tracking purposes.

As transactions are processed through the OpenFox Message Switch, the event triggers associated with the defined events are executed. Each event trigger is aware of its own event ID that is provided in the standard call to the subscriber execution module. The execution module examines the subscriptions to identify and extract any qualifying subscriptions for the event executed. The execution processor executes the defined action for each subscription located for the event. Control of the normal workflow is returned to the normal workflow at the point following the trigger execution. Normal transaction processing is not otherwise altered nor affected by the event management processing.

Database

As mentioned above, the notification functionality includes tables in the database, described below, and an XML class station in the OpenFox Message Switch. For each event, the system queries this table to determine if any user(s) have subscribed to that action as a trigger for action, typically a notification message.

Database Objects

The following tables are the key database objects:

12.3.1. S_SUBSCRPTION Table

```
CREATE TABLE OBJECTS FOR SUNSCRIBE NOTIFY APPPLICATION

DROP TABLE S_SUBSCRIPTION;
CREATE TABLE S_SUBSCRIPTION
(
SIDX                VARCCHR2(10) NOT NULL,
SUID                VARCCHR2(32) NOT NULL,
DESCRIPTION         VARCCHR2(256) DEFAULT NULL,
EVTID               VARCCHR2(10),
ORI                 VARCCHR2(9) DEFAULT NULL
);

DESC S_SUBSCRIPTION
 SIDX               VARCCHR2(10) NOT NULL
 SUID               VARCCHR2(32) NOT NULL
 DESCRIPTION        VARCCHR2(256)
 EVTID        VARCCHR2(10)
 ORI                VARCCHR2(9)
```

12.3.2. S_EVENT Table

```
DROP TABLE S_EVENT;
CREATE TABLE S_EVENT
(
EIDX                VARCCHR2(10) NOT NULL,
EVTID               VARCCHR2(10) NOT NULL,
ORI                 VARCCHR2(9),
ACTION              VARCCHR2(256) NOT NULL,
START_DATEDATE
);

DESC S_EVENT
EIDX                VARCCHR2(10) NOT NULL
EVTID               VARCCHR2(10) NOT NULL
```

```
ORI                    VARCCHR2(9)
ACTION                 VARCCHR2(256) NOT NULL
START_DATEDATE
```

12.3.3. SE_HISTORY TABLE

```
CREATE TABLE SE_HISTORY
(
SUID              NUMBER(10)        NOT NULL,    /*PRIMARY KEY*/
SUID              VARCCHR2(32)              ,/*USER SUBSC ID*/
DESCRIPTION       VARCCHR2(100)            ,/*COMMENTS*/
EVTID             NUMBER(10)        NOT NULL, /*EXECUTE*/
ORI               VARCCHR2(9)                  ,
STATEMENT  VARCCHR2(256)            .
DTM               DATE                     /*DATE STAMP*/
);
```

```
DESC SE_HISTORY
SIDX              VARCCHR2(10)             NOT NULL
SUID              VARCCHR2(32)             NOT NULL
DESCRIPTION       VARCCHR2(256)
EVTID             VARCCHR2(10)             NOT NULL
ORI               VARCCHR2(9)
ACTION            VARCCHR2(256)            NOT NULL
START_DATE DATE
```

The Interface Program

The Interface program, named A_SNDR, provides asynchronous, unsolicited message support for sending these notification messages. The interface program executes every NN seconds (NN being a period that can be determined and set by the installer and administrator of the system). The program examines the async_msgs table in the database for rows that are complete, and submits this to the gateway for delivery.

Following the submission of the transaction to the switch the A_SNDR program deletes the rows identified by the unique ID value.

```
create table async_msgs
(
STS        varchar2(1)        default 0,
ID         varchar2(10)       default 'A_SNDR',
SEQ        varchar2(2)        default 0,
IDX        varchar2(10)       DEFAULT NULL,
SRC        varchar2(30)       DEFAULT 'A_SNDR',
Data       varchar2(2000)     DEFAULT NULL
);
```

SRC must contain the interface program that will be picking up the transaction and submitting it to the message gateway.

This value is used by each interface that may be using the table to qualify and identify the rows that are targeted to that specific interface.

The DATA column contains the formatted transaction segment(s). These are concatenated by the interface program for submission to the switch for processing and delivery.

Following is a description of the subscription transactions.

Transactions and Events

- Enter Subscription
- Modify Subscription
- Cancel Subscription
- Query Subscription
- Enter Event
- Modify Event
- Cancel Event
- Query Event

Note that some already defined and registered events are normally included in the event table when the application is optionally acquired and initially installed and configured in an OpenFox Message Switch application environment.

13. Training

The deployment of the OpenFox CCH is neither complete nor successful until users and administrators are fully trained on the system software.

It is CPI's training mission to efficiently and memorably impart the knowledge we've gained over more than a quarter century of serving our own clients, and to do so in a way that minimizes disruption to the client's workplace and optimizes use of the people and resources available to them.

CPI's end-goal for training is to install a thorough understanding of the software in the client, along with the knowledge and capability to properly administer and use the system utilizing the tools provided.

CPI personnel will train client Administrators and Operations Staff with respect to all proposed OpenFox products.

CPI Personnel will train the client staff so that they may train the end users.

> It is CPI's training mission to efficiently and memorably impart the knowledge we've gained over more than a quarter century of serving our own clients.

What CPI Requires from Customers

CPI will require access to training facilities that provide both connectivity and suitable workstations for trainees, so that they can complete practical exercises. CPI typically develops more detailed specifications during project initiation, depending on its knowledge of the available equipment.

At a minimum, requirements will include:

- Projection equipment for use by the instructor to present training material;
- Microsoft Windows® workstations for each trainee to complete exercises;
- Connectivity that supports access to the training system installed at the central site; *and*
- Connectivity that supports access to external interfaces such as NCIC and NLETS, if needed.

How CPI Approaches Training

System Administrators

CPI will train Client System Administrators in all operational, monitoring and diagnostic features of all proposed OpenFox products. System Trained administrators will be able to successfully and manage all OpenFox products under their purview.

Operations Unit

CPI will train the client staff on all end-user functions of the proposed OpenFox System. Training will focus on developing client staff who can train those who will then, in turn, train end-users. CPI can also train all end-users of the system at an additional cost.

Training Materials

Training Guides

CPI will provide complete and comprehensive training guides for all proposed OpenFox products. Training guides can be used in training future in- house system administrators, operational staff, and end-users.

User Manuals

A complete set of user manuals is available for the products proposed. CPI will make these manuals available for download from the CPI OpenFox website. Applications also contain Online Help Files for immediate support.

Training Schedule and Timeline

Development of a training schedule and timeline will be highly dependent on the schedule for implementation. During project initiation, CPI will work with the State Project Manager to develop a

detailed training schedule for each Phase. Please see the next chapter to learn more about the initiation, organization and scheduling of CPI projects.

14. Project Management
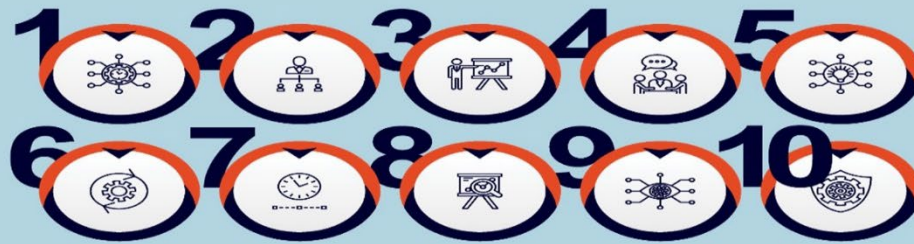
Here is a quick overview of CPI's CCH Project Management practices. This section is only a sample of typical installations. More detailed information is included in the SOWs and DELs included in this response. The timely and professional delivery of business solutions is paramount in today's competitive market. Organizations need reassurance that the solution they choose is not only a market leader but can also be integrated into their system and processes without disrupting their operations.

We also recognize that while each organization adheres to strict compliance requirements in a similar manner, the business processes surrounding that compliance can be quite different.

For these reasons, CPI's Client Services Group has defined a uniquely flexible methodology that enables us to implement customized solutions for our clients in the most efficient manner possible.

One of the foundational functions in a successful implementation is project management.

For this reason, each project is assigned a qualified project manager from the beginning through the post-implementation support. In this role, the project manager is responsible for the customer relationship as well as managing the three components of a project: scope, schedule and resources.

The CPI Project Manager will work closely with the State project management team to ensure successful delivery and implementation.

In doing so, the CPI Project Manager will have responsibility for guiding the CPI methodology through the various phases of the project. Each phase is described in detail in the next section. Throughout all phases of the project, the CPI Project Manager is a focal point of all CPI efforts in support of the implementation. CPI's methodology focuses primarily on the planning and delivery of quality services, which helps ensure that:

- Project objectives are understood by all stakeholders and goals are attained;
- Project timeframes and commitments are maintained;
- Project financial constraints are taken into consideration;
- Project changes are minimized, documented and approved per defined project objectives to support overall change management activities;
- Project status reporting is consistent and effective; *and*
- Risks are understood and mitigated.

Project Management

Plan Phase

The plan phase is the process that reviews the goals of the project, defines the project scope, determines the best method to deliver the project (e.g., Transition versus Big Bang), defines the risks for success, defines critical milestones and identifies the project resources that will be required.

Key goals for the planning phase are:

- Setting expectations for all stakeholders;
- Communicating delivery methodology to all stakeholders;
- Communicating the goals and objectives of the project; *and*
- Identifying the general personnel resource requirements for a successful implementation.

The planning phase should result in a preliminary high level schedule.

Discovery and Define Phase

The discovery / define phase determines the essence of the solution and is the process by which the stated requirements are reviewed and information is gathered particular to specific requirements or unique processes.

This phase requires on-site meetings to gather the necessary information. During this phase the user, functional and system requirements are gathered and documented. All aspects of the system – including all input and output message formats and required interface specifications – are analyzed and reviewed in an effort to ensure that items are not overlooked.

The delivery methodology chosen in the planning phase is also re-evaluated to verify/determine if it is still viable or if anything discovered in this phase will preclude it from being executed.

Design Phase

During design phase, project requirements and the information gathered during discovery are compared to the existing functions and capabilities within the OpenFox system to determine changes or additions needed.

The result of this effort is the System Design Specification document, which includes a section on each of the interfaces required, as well as the input and output message formats specific to that interface. This document will also detail parameters that will be used to generate the base system.

This document is *not* a description of all of the capabilities inherent in the OpenFox system but is only the documentation detailing the work that is required to implement the system meeting the requirements. The System Design Specification will also contain a detailed description of the hardware required (if included in the procurement) and will also specify the electrical and other installation requirements.

The System Design Specification will be reviewed, corrected and agreed upon by both parties during this phase.

Once it is complete, the high-level project plan will be modified to include a detailed, task-oriented plan. When the Design phase is complete, several activity threads can be executed concurrently. Training plans, ordering and staging of hardware if included in the project.

Communication

Communication is the most important action a Project Manager (PM) undertakes while managing a project, and CPI believes deeply in proper and timely communication.

At the outset of the project, the CPI Project Manager (PM) will host a project kick-off meeting with all affected internal and external stakeholders. This meeting will help to establish/reinforce the communications expectations of all involved parties, detail the frequency of these communications, and outline the deliverables complete with ownership for all involved parties. The Communications Plan is intended to be updated (if needed) prior to beginning segmented project phases.

The CPI Project Manager will be solely responsible for communicating updates in a timely fashion in accordance with agreed-upon practices (i.e. weekly status memos, bi-weekly conference calls, etc.). These updates include issue/resolution in addition to simple status reporting.

Project status updates shall be constructed using Microsoft Word (or comparable word processing software), then delivered to the audience in .pdf format. It is the intent of this Status Report to be a "living" document which is constantly updated as needs arise, as well as to show a history of statuses, issues, resolutions, etc.

The Communications Plan is to be kept and updated as needed by the CPI Project Manager. Any updates to the Communications Plan will be discussed with the Client Project Manager and other project stakeholders as needed. Non-emergent communications can take place informally via email or phone call between parties; however, formal communications shall be sent according to the Stakeholders Communications Plan shown in the below table. Key messages to disseminate among Senior Client staff may include overall project status, major issues as outlined in the Issue Log, and cut-over notification. CPI and the Client staff have the right to ask for additional communication methods, to alter the Communications Plan Schedule, or other actions as needed during the course of the project.

With the agreement of involved stakeholders, the weekly Status Report will be accompanied by any other required documents, such as Risk Register, Issues Log, Gantt Chart, etc. The tables below detail those project stakeholders most likely to be involved with the project communications, as well as the most common and frequently used communication methods established by CPI for use in Stakeholder communications.

NOTE: A business day is determined to be any non-holiday weekday Monday through Friday from the hours of 8 AM to 5 PM Eastern Standard Time.

Stakeholder Communications

Communication Type	Communication Schedule	Communication Method	Initiated By	Recipient(s)
Project Task Report	Weekly	Face-to-Face / Email	CPI Engineers	CPI Project Manager
Project Status Report	Weekly each Friday	Email	CPI Project Manager	Project Team
Project Tracking Report	Weekly each Thursday	Email	CPI Project Manager	Project Sponsor / CPI Directors
Status Conference Call	Bi-Weekly on Wednesday	Conference Bridge	CPI Project Manager	Project Team
Project Review	Monthly	Face-to-Face	CPI Project Manager	CPI Project Team
Risk Mitigation Status	As needed	Email	Responsible team member	CPI Project Manager
Requirement Changes	As needed	Email / Face-to-Face	Party requesting the change	CPI Project Manager / Customer Project Manager
Issue Log	Weekly (with Project Status Report)	Email	CPI Project Manager	Customer Project Manager / Project Team
Cut-over Notification	48 hours prior to cut-over	Email	CPI Project Manager	Project Team

Issue Management

Projects are rarely completed without incident; CPI strives for complete communication of project issues, regardless of how small.

Any issue is communicated to the CPI Project Manager as soon as they become relevant. The CPI Project Manager and CPI's team of Subject Matter Experts (SMEs) will examine the issues and record them in the issues log. If issues arise that qualify for engagement with the Client staff, the CPI Project Manager shall inform the Client Project Manager within 24 hours of the issue arising so as not to delay discussion/resolution.

The Client staff are able to raise issues through the Client Project Manager with the CPI Project Manager, and the Client PM shall own the responsibility of keeping the Master Issues Log for project records. The Issues Log is a living document that is continuously updated throughout the life cycle of the project.

At the end of the project, the CPI Project Manager and his team shall examine the Issues Log and use it as a guide to developing the Project "Lessons Learned" document.

Issues may also qualify for inclusion in the Risk Register (described in the Risk Management Plan) depending on the nature and impact of the issue/risk.

In such cases, these issues will exist in both documents for the life of the project. The CPI Project Manager owns the responsibility of documenting all issues and ensuring that the Issues Log is up-to-date with project activities.

In accordance with company standards, the CPI Project Manager vets the issue and potential impact against the original signed Statement of Work to determine if the issues are related to project work-to-be-done, or if they are due to changes to the agreed-upon Work Statement. In cases where an issue is part

of the tasked work-to-be-done, the CPI Project Manager will work with the CPI Engineering Team to resolve the issue in a timely manner using all available resources.

If the issue relates to changes outside of the original Statement of Work, the CPI Project Manager will conduct a survey to determine the amount of additional effort and/or resources needed to accomplish the work; this survey typically requires 48 hours for completion. Any work not covered under the original agreed-upon Statement of Work will be presented to the customer in a formal Change Order Request. The Issue Log will be provided weekly along with the Project Status Report; an example is provided below.

Date Entered Date	Issue Desc.	Importance	Project Impact	Action Plan	Owner	Review Date	Target Resolution	Date Complete	Status

Quality Management

The Quality Management Plan provides direction for ensuring consistent product and service. Quality management consists of activities related to quality planning, quality control, quality assurance, and quality improvement. Quality is embedded in all CPI products and services; however, each installation is highly configurable and requires rigorous testing by both CPI and the Client before the product is fit for production use.

CPI at its core provides a secure, stable, fast, and accurate process that defines and directs law enforcement messages to and from authorized stations and the intended destination. CPI also provides an array of products and services to accompany the message routing that provide additional functionality, so the test effort depends on the specific products in use.

Plans are worthless. Planning is essential.

Dwight D. Eisenhower, U.S. President

Data Management

Access

Access to the OpenFox system requires multiple layers of authorization on the front and back end of the message traffic.

Users are authenticated via user-id/password in combination with authorized workstations (via the license registration process). Access credentials are managed by the licensing agency.

On the back end, transactions are validated at the access point of the criminal justice repository being queried. Access is further verified by the OpenFox Message Switch via authentication taking into account the authority levels of the station being used and the user attempting to access data.

Additional security is assigned to specific roles that define the types of message traffic allowed per role. This added layer of access control ensures that data is properly accessed only by authorized personnel from authorized workstations.

Data Acquisition

The OpenFox system acquires data from manually entered sources initiating a message and from a limited number of criminal justice data repositories. Data is passed across a secure network using the customer's network security protocol as well as encryption methodologies as specified therein. Examples of secured external networks with connections to the OpenFox Message Switch include NCIC, NLETS, and Courts (others as determined by design).

Data Storage

Data is stored according to compliance regulations to provide essential services, including historical backups and guaranteed delivery at both detailed and aggregated levels, specifically for the purposes of transaction retrieval and reporting by authorized users.

Data Integrity

Access to the data is strictly controlled by the OpenFox system. Users do not have access to the data repositories directly. There is no user capability to modify transactions after they have been sent or received.

Data Documentation

Data accessed by the OpenFox system is determined and managed by the data providers (i.e., NCIC, NLETS, State Hot Files, etc.). These agencies provide manuals and updates for proper message construct and interpretation. Additionally, help is available via the online help commands.

Software Development and Customization

Software development is requirements-based. The customer is integrally involved in the discovery, communication and documentation, and approval of the requirements, as well as the acceptance of the completed development effort.

CPI takes an iterative, component-based, continual integration approach to software design. When embarking upon a design, whether for a large complex project or a smaller one, the first step is design meetings. Depending upon complexity and scale, there could be one initial design meeting, or the design could itself be an iterative process which completes over several meetings.

The goal of the design meetings is to identify the requirements of the project and the necessary work to be done to meet the requirements. This process realizes the industry best practice of creating a clean division of work among team developers.

The focus is on breaking the requirements into components. Component units can then be tested independently to create a healthy focus on short-term goals and allow for continuous integration and feedback.

Having a mindset of creating abstracted components whenever possible also allows for reuse of developed components. At CPI, we firmly believe that this design approach is largely responsible for us to have so successfully delivered CTA-level message switching systems across the country in the time frame we have. By creating abstract components and re-using them, we have been able to adapt our system quickly and reliably to many different environments supporting largely diverse requirements.

Components are tested in isolation and then together as appropriate. Integration is infused into the process from the first moment and then throughout. By taking these iterative steps, we can avoid a large sudden system integration test (where everything is thrown together for the first time). Instead, integration is happening continually through the development process.

The other large advantage of iterative development is the ability to handle requirement changes as they occur. Often the end user is not fully aware or able to describe all the requirements of the project fully at the initial phase. As components become developed and integrated, a better understanding of the overall system emerges, and changes to requirements can be handled far more easily.

Particular version control is largely a function of the environment. CPI develops software across multiple environments: UNIX, C, C++, Java, SQL, etc. Tools appropriate to each environment are used to maintain source code version control. All development engineers report to Resource Managers who serve as mentors and oversight providers. Our resource managers have decades of experience which they bring to bear on code reviews, design challenges, and implementations challenges.

Document Delivery

Document deliverables produced and maintained by CPI are presented with version numbers and dated with the submission date. Approvals for deliverables are accepted via email and are not physically associated with the specific document.

Testing

All testing is performed on local test servers located in Bolingbrook, IL. Upon successful production, migration results are validated on the production servers located at the customer site.

Testing is requirements-based. The customer is integrally involved in the discovery, communication and documentation, and approval of the requirements, as well as the acceptance of the completed development effort.

CPI Testing

CPI engineers perform unit testing as an integral part of their iterative component-based development.

For example, when delivering new communications interfaces, it is common for engineers to develop both the interface itself and a 'test peer' that performs the basic roles of the system to which the new interface will be connected. Then, unit testing can be done to touch on each of the use-cases, conditions, errors, etc. that the product will encounter because the 'test peer' can be made to perform those roles on demand. For simple software components, unit testing is often integrated into the development environment (i.e., right into Mercurial for our Java components, etc.).

For performance testing, CPI has developed a set of automated load programs that can be started and executed against the entire message switch deployment. This gives us feedback about system performance across several key areas, such as (but not limited to):

- CPU utilization;
- Disk Storage performance;
- Network performance;
- Application performance;
- Message latency; *and*
- System resource consumption.

Known acceptable values for the system performance (generated over our 30-year history of providing these systems across over half the country) are compared to the results so that any problem areas can be addressed and corrected before the system is put into production. It is common practice to perform system-wide load and performance tests several times along the way of the project, e.g., when the system is first built and staged, at various times along the development cycle (especially if any hardware configurations or components are altered), after the deployment of intensive software components, and of course shortly before go-live.

Customer User Acceptance Testing (UAT)

At the completion of testing by the CPI development team the system is made available to the customer to assist in validating the results against the requirements. When the customer is satisfied with the functionality the project is scheduled for implementation.

> **Nothing is less productive than to make more efficient that which should not be done at all.**
>
> Peter Drucker,
> Author

Risk Management

Managing risk is paramount to bringing any planned project to completion, and as such is treated by CPI Project Managers with the utmost seriousness and urgency. Risk analysis is continually done throughout the lifecycle of a project, not solely at the moment an event occurs.

CPI strives to identify risks and their associated impacts in order to implement mitigation plans according to industry and PMI best practices, while also understanding how such mitigation plans may impact the project schedule, finances, and overall success.

Two tools used by CPI in Managing Risk are the Risk Register and the Probability/Impact Matrix. As new

risks are identified (be they known, unknown, known-unknown, or unknown-unknown risks), they are logged into the Risk Register and a full analysis of each risk performed using the Risk Register template.

Any contingency situations will be discussed extensively with the Client Project Manager after analysis is completed by the CPI Team. Communication of risks shall be sent within 24 hours of risk identification to the Client Project Manager in accordance with the Client guidelines.

The Client Project Manager has the responsibility of keeping the Master Risk Register; updates shall be included with each weekly Status Report.

Schedule

CPI employs a variety of software used to manage projects including the Microsoft Office suite of products (Excel, Word, etc.), as well as a project-based software. This project management software shares numerous functionalities with MS Project and is favored by CPI to manage project activities efficiently. Changes to the Project Schedule (planned or not) must be submitted via change order request to the CPI Project Manager, who will then consult the necessary resources and present a Project Schedule Change request to the Client Project Manager.

All project activities are monitored by the CPI Project Manager, as well as his superiors. Updates to completion percentage, project tasks, task ownership, WBS details, and other PMI-recognized project schedule components will be updated by the CPI Project Manager using this program. Depending on agreement with external stakeholders, the information can be exported into .pdf or .xlsx formats for inclusion with the Project Status Report. The project schedule includes the requirements for:

- Detailed Activity Descriptions;
- Start and end dates;
- Activity durations showing planned work days and planned hours;
- Responsible parties;
- Milestones, including identifying Critical Path Milestones;
- Dependencies;
- Predecessors; *and*
- Percent Complete.

In addition to the mentioned required sections, the PMs report on the following sections:

- Recurring Task, which shows those tasks such as on-going testing which may occur;
- Priority, which allows the user to edit those tasks which may be higher in importance; *and*
- Progress Status, which shows tasks as "on-time," "late," and "at risk" for easy sorting.

Staff Management

CPI employs a full staff of Developers, Programmers, Engineers, and Project Managers to manage its projects and customer workload. All CPI employees assigned to this project consider their primary workspace to be the CPI headquarters in Bolingbrook, IL. The Staff Management Plan consists of five (5) elements: Staff Planning, Staff Acquisition, Staff Training, Staff Tracking, and Staff Transition.

Prior to the execution of the project, the CPI Project Manager will meet with Senior Staff to determine exact project task assignment within the different departments.
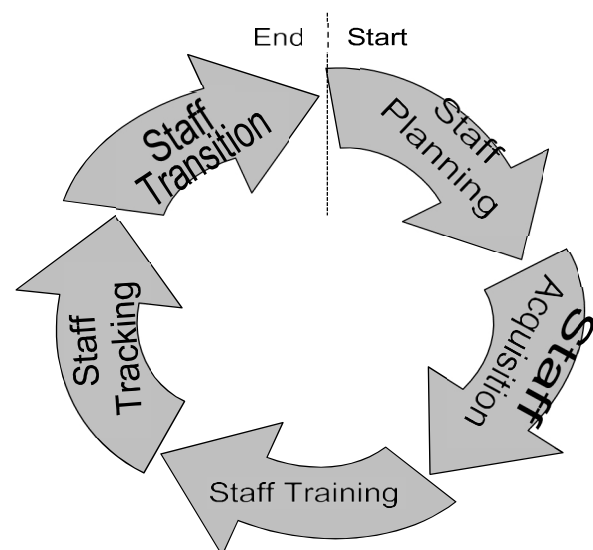
A Staff Matrix is shown below; it outlines project roles, responsibilities, competencies, and reporting relationships within CPI. It is the responsibility of the CPI Directors to determine CPI Staff competencies and acquire any needed training for the resources assigned. The CPI Directors are responsible for tracking the CPI Staff availability and customizing their schedules so as to allow for optimal and efficient work conditions needed to complete assigned tasks for this project. Once a CPI resource has completed his or her assigned tasks, and that work has been verified, he or she may be transitioned off the Client project for other CPI work. Staff transition is a normal CPI process and is accomplished at the Director-Level by CPI department heads.

Additional roles and/or responsibilities may be added to this Staff Management Plan throughout the course of the project; however, all changes to the Staff Management Plan are subject to approval via a written, formal project change request to the CPI Project Manager. It is understood that work done on the project is expected to occur during normal business hours as previously described, but that after-hours work may be deemed necessary at different points in the project if milestone dates are in danger. The expected staffing needs (subject to change) from CPI include:

- Director, Project Management (Sponsor);
- Director, Client Services;
- Lead Project Manager;
- Project Manager;
- Technical Lead;
- Developer, Database;
- Developer, TP;
- Developer, OP;
- Developer, Communications;
- Developer, GUI;
- Engineer, Hardware; *and*
- Admin.

CPI Staffing Requirements

An example of how CPI Staff resources and efforts could be allocated are shown below.

Team	Role	Plan	Sys Dev	Test	Cut-Over	Closeout
Database/Processing	DB Developer	1	2	1	1.5	0
	TP/OP Developer	1	2.5	1	1.5	0
GUI/Web Services	GUI Developer	1	1	1	1	0
	Comm Developer	1.5	1.5	1.5	1.5	0
Technical/Hardware	Technical Lead	1	1	1.5	1	1
	Hardware Engineer	1	1	1	0.5	0
	Director, Client Services	1	1	0	0	1
Project Management	Project Sponsor	1	1	0	0	1
	Lead Project Manager	1	1	1	1	1
	Project Manager	2	1.5	0	1	0
	Admin	1	1	0	0	1
	Cost Manager	1	1	0	0	1

CPI Staffing Matrix

Role	Responsibilities	Reports To	Competencies	Skill Set
Director, Project Management	Guidance, Liaison with Management	COO	Project Management, General Management	MS Office Suite, COBOL, Assembler, 'C, DEC Basic', IBM AIX, XML
Program Manager	Guide PM Team	Director, PM	Hardware & Software Program Management	PMP, Microsoft Office Suite, CCH Hardware & Software,
Lead Project Manager	Manage Project	Program Manager; Director, PM	Project Management	PMP, Microsoft Office Suite, Communications
Project Manager	Assist Lead PM	Project Manager; Director, Project Management	Project Management	Microsoft Office Suite, Communications
Trainer	Training, SME	Director, PM	OpenFox Message Switch, Programming, Industry Knowledge	XML, Training, Communications, Documentation
Developer, Database	Develop CCH Database	Director, Database	Database Development, Customization, Support	XML, SQL, PL/SQL, Java, JavaScript, C/C++, Pro*C
Developer, TP/OP	Develop Transactions and MKEs	Director, TP	Message Key Creation/Integration and Customization, Transaction Processing	XML, C, UNIX, IBM AIX
Developer, Communications	Develop Interfaces and Web Services	Director, Sys/Comm	Interface Development, Integration, and Customization	XML, C, Java, protocols including: TCP-IP, WS, MQ-series
Developer, GUI	Develop User Interface, Web Presentation	Director, User Applications	End-User Application Development, Integration, and Customization	XML, AJAX, Java, JavaScript, CSS, HTML, Cascade
Engineer, Hardware	Install Switch Hardware, Stage Eqmt	Director, Client Services	Requirements Gathering, Hardware Installation and Integration	IBM-certified, Hardware & Software Configurations, Networking
Admin	Process PO and Invoices, Track CPI Time	VP, Admin	Finance, Processing	CPI time entry software, accounting

Client Staffing Requirements

At the writing of this Staff Management Plan, it is estimated that CPI has all the necessary resources to accomplish this project in-house. However, the Client Staff will be needed to assist in the Discovery and Testing Phases, and also to verify work done at any time in the project via request from the CPI Project Manager. It is expected that inquiries from CPI about project deliverables will be answered within 48 hours by the Client staff so as to prevent prolonged project delays.

Potential Client staff requirements include:

- Lead Project Manager responsible for managing the project;
- Client-specific Subject Matter Experts for CCH, end-user interface, trainers; *and*
- Actual end-users to test and verify the CPI deliverables.

The end-users testing CPI deliverables shall be considered "advanced" users at a minimum, with the ability to accurately and eloquently describe the user experience for reporting and verification purposes. The Client is expected to provide a team of trainers to engage with the CPI Trainer in designing a "train-the-trainer" program for after the project closes.

Defect Management and Resolution

CPI prides itself in its record of service to its customers and has an outstanding track record of system up-time and response time to reported defects. The Defect Management & Resolution Plan provides direction in identifying defects and tracking the progress of their resolution through acceptance of the necessary system change. A Defect Tracking Log will be updated as-needed by the CPI Project Manager and provided to the Client Project Manager at the agreed-upon intervals.

Defects are defined as an error, failure, or deficiency that prevents the solution from meeting any of the project objectives (e.g., meeting any specified project requirements) both functional and non-functional; this includes any performance requirements.

Defects may be reported by either the Customer or by CPI. All defects must be reported to the CPI Project Manager in writing, who will then log the defect into the Defect Tracking Log. Defects recorded will capture the expected and actual results while noting the discrepancies in detail. Defects are distinguished

from issues according to the existence of stated requirements. A lack of a stated requirement that is not being met will require the treatment of the item in question to be handled as an Issue and will be scheduled as an enhancement.

Defect Tracking Log

The Defect Tracking Log is an Excel-based tracking tool used by CPI to log and track defects as they are reported throughout the lifecycle of a project.

Required data elements for the log include Defect Tracking Number, Report Date, Requestor, Defect Summary, Defect Details, Severity Level, Assignment, Defect Status, Resolution Date, and Resolution Alternatives.

Defect Severity

Severity values will be assigned to defects as follows:

Defect Tracking Log Severity Levels		
Severity	**Classification**	**Criteria**
5	Critical	Must have – Catastrophic failure – Highest risk Level – Failure assured
4	High	Impairment of critical system function(s) and no workaround solution exists – High Risk for Failure
3	Moderate	Impairment of system function(s) but a documented workaround exists – Medium Risk
2	Low	Little Impact – Low Risk
1	No Real Impact	High user/client tolerance level – No Risk

Defect Category

The following values are captured and assigned when the defect is detected to assist in assignment of resources:

Archive & Retrieval	CCH	Configurator	CPI-VPN	Desktop
Desktop-A/R	Desktop-Configurator	Desktop-Interceptor	Desktop-Messenger	Desktop-MSNGER-Form
Desktop-OFC	Desktop-SOR	DMV	Hardware	High Availability
Hot Files	III	LEWV	LPR	Message Switch
NCIC	NLET	OpenCloud	Operator Aid	Outage
Report-Help Desk Ticket	SAM	SOR	Switch-Key	Switch-Station
Switch-User	TP	Update	User Interface	Validations

Defect Assignment and Resolution

Defects are assigned initially to a CPI Project Team member based on the type of issue reported as well as based on availability and experience of resources in that department. As defects are worked on, the CPI Project Manager is responsible for updating the Defect Tracking Log with applicable information in a

timely manner and discuss resolution options and progress with the customer stakeholders to determine a resolution or recommended course of action and estimated resolution time frames.

The CPI Project Manager will oversee and communicate the status of all development and defect testing as needed within the established status

reports. The CPI Project Manager is responsible for all CPI testing and coordination, with the customer for acceptance testing (UAT) being the responsibility of the Client Project Manager. Resolved defects are reviewed by the Client Project Manager or a delegated team member to ensure acceptable resolution. Once approved, the defect is closed out in the Defect Tracking Log; however, it is not deleted. The Defect Tracking Log is intended to be a complete log of activity throughout the lifecycle of the project.

Conclusion

Our methodology, combined with proven products and unmatched industry experience, results in a reliable delivery process demonstrated by successful implementations in dozens of states and federal agencies. Additionally, CPI has found that this process allows for early identification and mitigation of risk. This approach will also allow the State to measure success and performance as the project progresses.

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