U. S. Department of Justice
Information Technology Strategic Plan

Appendix F

Segment Architecture
of the
Law Enforcement Booking Process

U.S. Department of Justice IT Strategic Plan

Appendix F
Segment Architecture Analysis of the Law Enforcement Booking Process*

Preface

This document provides the Department of Justice (Department) with an example of a segment architecture analysis to illustrate how Enterprise Architecture (EA) Planning can be used to provide a blueprint for defining an organization's Baseline (As Is) and Target (To Be) architectures. EA Planning assists in defining the business processes needed to support an organization's mission; defining the data required to support those business processes; and identifying how to provide that data to those in the organization who need it. Usually EA Planning, as its name implies, encompasses an entire organization. It is essential to first have this enterprise-wide view before developing a detailed analysis of a single segment. Efforts are underway within the Department to develop the overarching framework, however, for purposes of illustration only, one segment of the Department's enterprise was chosen for this study.

The focus of this example is the Department's law enforcement booking process. The booking process was chosen as an illustration because of differences in the way that the Department's law enforcement components manage booking data. The Department developed an automated system called the Joint Automated Booking System (JABS) to facilitate the sharing of arrest and Federal offender data among the law enforcement components. Currently, the Drug Enforcement Administration (DEA) is the only Department component that interfaces with JABS, although, the United States Marshals Service (USMS), the Federal Bureau of Investigation (FBI), and the Bureau of Prisons (BOP) are working toward an interface capability. In addition, the Immigration and Naturalization Service (INS) is pursuing a modification to their booking process to include JABS.

This segment architecture example compares how the DEA and the INS manage booking data in support of the Department's mission and strategic goals. These two law enforcement components were chosen because each provides an example of a different approach to the data flow. The DEA developed an electronic process and the INS currently uses a manual process to transfer data to the Federal Bureau of Investigation's (FBI) Integrated Automated Fingerprint Identification System (IAFIS).
For purposes of this document, the baseline view of the Department's booking process is based on JABS, Version 1.3, which is the current operational version. The Target Architecture describes a combination of elements from JABS, Version 2, and INS' future interface from its Automated Biometric Identification System (IDENT) to IAFIS. The IDENT interface with IAFIS (IDENT/IAFIS, Version 1.2), would automate the INS interface with JABS.

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<u>**Part I.**</u>   <u>**Architectural Model**</u>

1.0   INTRODUCTION

1.1   Purpose

This segment architecture analysis of the Department of Justice (Department) booking process defines a target architecture to optimize the relationships between the Department's booking process and the underlying information technology (IT) that supports that business process. It is a high-level blueprint that shows how the business activities and data should be supported by IT (applications and infrastructure). The Department's vision is for its Joint Automated Booking System (JABS) to become the conduit for access to Federal law enforcement booking data (see Figure 1).
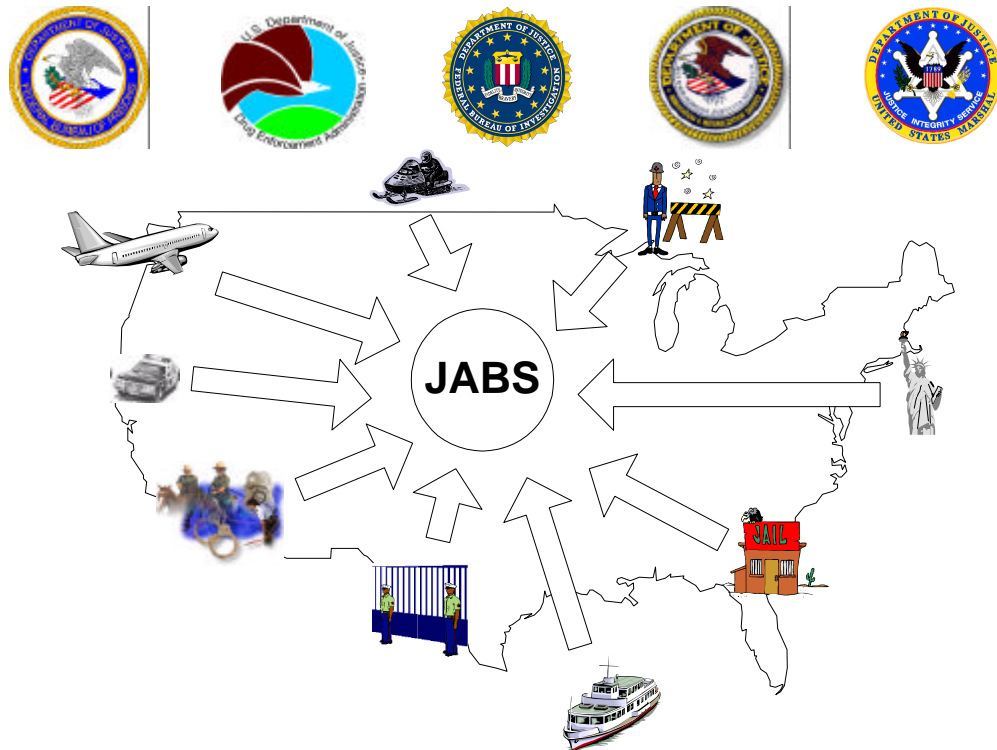

Figure 1: JABS: A Conduit for Law Enforcement Data

1.2   Scope

The Department has developed JABS, a system for electronic information sharing to automate the booking processes of the entire organization. This segment architecture analysis examines how two of the Department's law enforcement components, the Drug Enforcement Administration (DEA) and the Immigration and Naturalization Service (INS), use their own

This document contains information that serves the purpose of demonstrating an example of a segment architecture and does not reflect the current JABS program in its entirety.

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internal booking processes to manage data in support of the Department's mission and goals. The analysis also examines how these two components share booking information and interface with two other important systems in the Department's booking process: JABS and the Federal Bureau of Investigation's (FBI) Integrated Automated Fingerprint Identification System (IAFIS).

2.0   ARCHITECTURAL METHODOLOGY

This segment architecture analysis consists of three primary elements. The first is the Baseline Characterization of the Department's booking process, which describes the booking process and examines how well it supports the Department's business. The second component is the Target Architecture, which describes the four architecture views—business, data, application, and technology—that make up the booking process. The third component provides a gap analysis and a transition plan. The gap analysis identifies the gaps between the two architectures (the baseline and the target), while the transition plan outlines the migration from the baseline (As Is) to the target (To Be) architecture. This methodology is based on guidance from the Federal Enterprise Architecture Framework (FEAF) for Enterprise Architecture (EA) Planning, and includes inputs from the Department's Business and Data Architectures. Figure 2 depicts how these elements relate during the process of developing and maintaining the segment architecture for JABS.

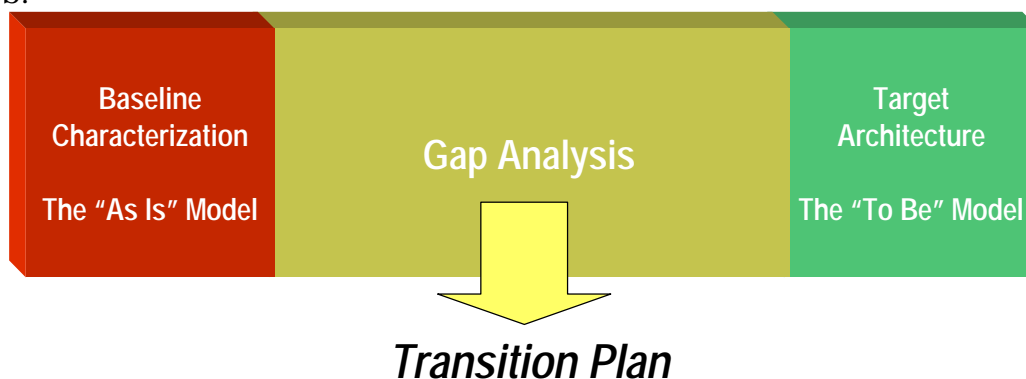| Baseline Characterization	Gap Analysis	Target Architecture
The "As Is" Model		The "To Be" Model

Transition Plan

Figure 2: Components of a Segment Architecture

This approach is consistent with the guidance in the Clinger-Cohen Act. This Act directs the Chief Information Officer (CIO) to ensure that information technology (IT) is acquired and information resources are managed according to the business priorities of the organization. The first step in developing a segment architecture is to define the Enterprise Statement. The Enterprise Statement defines the scope of the Department's booking process.

> *Enterprise Statement: Rapid identification of suspects, sharing of common booking information among all law enforcement components, and tracking Federal offenders.*

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3.0   CHARACTERIZATION OF THE "AS IS" JABS BASELINE MODEL

3.1   The Business Architecture

The Business Architecture defines a high-level view of the Department's booking process within the context of the Enterprise Statement. In addition, it examines the activities and attributes (e.g., user classes) that make up that process and the relationships between them.

3.1.1   Overview of the Department of Justice Booking Process

The Department's booking process is actually a compilation of systems and processes. The process consists of the Department-wide system for capturing booking data, JABS; the systems and processes established by each of the Department's law enforcement components; and the FBI's IAFIS, which provides ten-print fingerprint identification and criminal history services to other law enforcement components. The law enforcement components collect much of the same arrest information through their booking processes, such as ten-print fingerprints and other biometric information, to facilitate making a positive identification of a suspect. Each of the components has the capability to query IAFIS to assist in identifying suspects by obtaining a positive fingerprint match. The roles and responsibilities of the different players are illustrated in Figure 3.
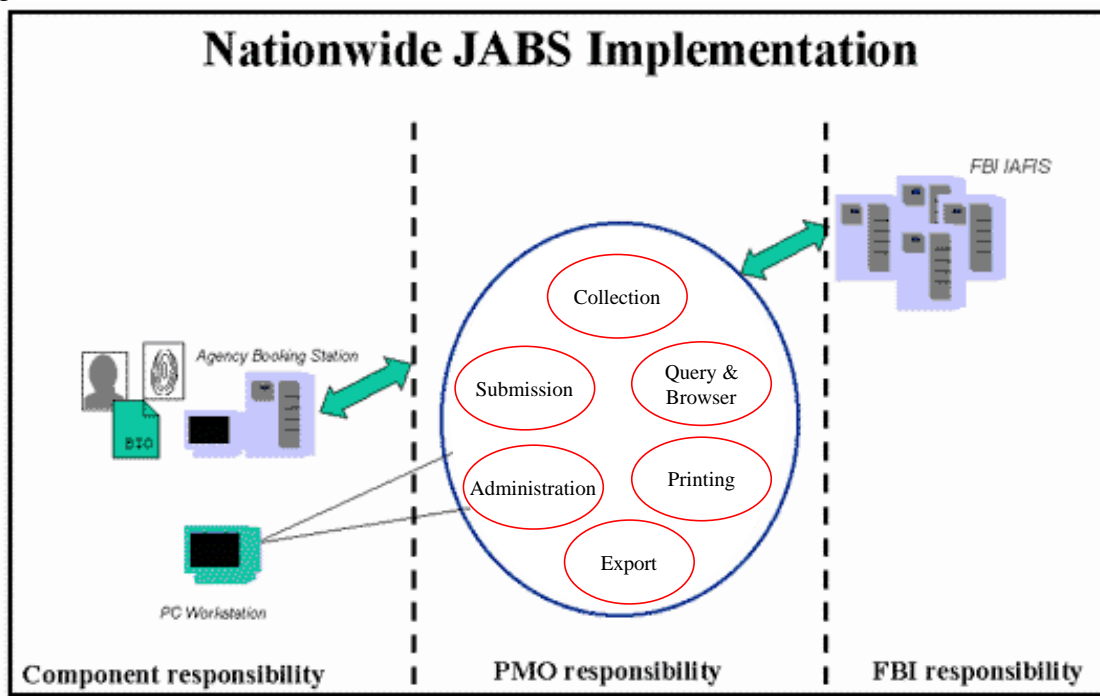

Figure 3: Nationwide JABS Implementation

In 1993, the Department determined that there was a need to share booking data among the Department's law enforcement components. To meet this requirement, JABS was developed to transmit fingerprint and other relevant arrest and suspect data between IAFIS and the law enforcement components. In 1999, the Department completed development of the JABS System

This document contains information that serves the purpose of demonstrating an example of a segment architecture and does not reflect the current JABS program in its entirety.

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Boundary Document and established the high-level requirements for the JABS nationwide development and implementation. The objectives of the JABS program are outlined below:

Automate the Booking Process	Facilitate the rapid identification of individuals under arrest or detention and minimize duplication of data entry by multiple law enforcement components through the automation of the booking process.
Share and Exchange Booking Information	Enable each law enforcement component to share and exchange booking information.
Track Federal Offenders	Allow immediate identification of known Federal offenders in time-critical situations and track the offender's location of incarceration and store a history of changes to location.

As a result of a JABS pilot program conducted in South Florida in 1999, it was decided that the following functional *principles* should drive the design and implementation of the nationwide deployment of JABS.

Each component will develop its own automated booking capability.

JABS will provide the critical data exchange capability among law enforcement components.

As a central transitional data repository of booking information, JABS will allow authorized users to query the database to find needed information about an offender.

JABS will be the conduit to successfully transmit digital fingerprints to IAFIS for identification and return this information to the source component.

When fully deployed, JABS will provide the following law enforcement functionality:
Submission to FBI's IAFIS — Each designated law enforcement component will have the capability to electronically submit the booking packages that were created in its internal automated booking system to the FBI's IAFIS through JABS. As part of this service, JABS will validate and repackage (reformat to comply with IAFIS directives) the data prior to submission to IAFIS. The submission will be tracked in JABS and the data will be archived for future retrievals and queries.
Access and Retrieval — Each designated law enforcement component will have specialized access to booking records that it submits. In addition, the capability to retrieve information that another component originated for further analysis and processing.
Query and Search Tool — Standard query and search capabilities will be available to all authorized users. When performing investigative casework, users can search on common data fields to retrieve possible suspect matches and additional prior booking information. Data fields subject to query include file numbers, personal information, physical characteristics, vehicles, and known criminal associates.
Reporting Capability — A tool that generates standard reports; such as component statistics, will be available to all authorized users.

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Additional Capabilities — Various technical and administrative services; including security, auditing, database management, e-mail, and interface tools; will be available. As more components use JABS, many benefits are envisioned for the future. JABS could provide an offender/case-tracking number to be used by all Federal criminal justice agencies. This could ensure court dispositions and U.S. Attorney declination decisions are electronically transmitted to the criminal history records at the FBI's Criminal Justice Services Division.

3.1.2 Law Enforcement Components Booking Processes

The Department's booking process is intended to manage booking data via six business activities as follows:

Creating a new booking record

Updating an existing booking record

Querying existing booking records

Managing the component level booking station

Managing JABS

Providing Department-wide technical support for JABS

The DEA and the INS components are responsible for supporting the "*Enforcement Operations*"[1] business area of the Department. While their missions and goals vary, they perform similar business activities. Each component conducts the business function called "*Arrest Suspects.*"[1] This function requires a booking process to gather specific information about detained or arrested individuals. Also, each component's booking process collects biometric and biographic information that is important for suspect identification.

3.1.2.1 DEA

The DEA collects booking data through an automated booking process called the Firebird Booking Service (FBS). When a suspect is arrested, ten-prints and other arrest related data elements are collected on a Form FD-249 (Arrest and Fingerprint Card) in an FBS local workstation that directly transmits the booking package electronically to a JABS server. JABS stores the booking data in a central database where it is available to be queried by the DEA. JABS repackages the booking data into a format determined by the FBI and sends it to IAFIS for a positive identification of the suspect. IAFIS returns a response to the DEA, usually within 2 hours of the original submission to JABS.

3.1.2.2 INS

INS currently employs a mix of manual systems and automated systems to perform the booking process. It uses its Enforcement Case Tracking System Booking Module (ENFORCE) to process the majority of its apprehensions. ENFORCE is an automated system that is used extensively in the field by border patrol agents to submit electronic data forms. A related system was

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[1] U.S. DOJ, Information Resources Management, *U.S. Department of Justice Enterprise Business Architecture*, December 17, 2001.

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developed called the Automated Biometric Identification System (IDENT) as an automated, two-print identification system. These two systems, ENFORCE and IDENT, exchange information through an electronic interface. The purpose of the ENFORCE/IDENT interface is to allow the ENFORCE users to correlate the information stored via electronic forms with the biometric data stored in IDENT. The INS imports a subset of the FBI's "wants and warrants" fingerprint files into IDENT and uses this information to identify known criminals, usually within 2 minutes. The initial booking process is automated, but the submission of the ten-prints to the FBI is manual.

As soon as the INS agents determine that it is necessary to hold a suspect for more than 6 hours, they *book* the suspect. A set of ten-prints and other biographic data elements are collected and placed on a Form FD-249 fingerprint card. The booking information is added to a case file and mailed to the FBI, or in a few instances, transmitted via secure facsimile, for the eventual inclusion in the FBI's IAFIS. This data is not presently transmitted through JABS. The FBI examines the fingerprints and compares them with prints stored in IAFIS. Normally, the INS receives a response from the FBI within 6 to 8 weeks. The INS does not store the ten-prints in an INS database, however, it does store two index fingerprints in its Automated Biometric Identification System (IDENT) database.

3.1.3   User Classes and Business Activities

Of the 128,000 employees in the Department, approximately 36 percent are classified as specializing in enforcement and investigations. Another 11 percent are detention officers. These Department employees, who represent nearly half of the total, comprise the core users of the Department's various booking processes. In addition to the core users, attorneys supporting the litigation and hearings represent another category of users who require booking data for prosecution, management, and analytical purposes. This represents an additional 10 percent of the Department's workforce. In total, over half of the Department's employees are engaged in business activities that require standardized information from the booking process.

The components have a similarly wide variety of employees who use the booking data. Approximately 4,500 of the DEA's 9,500 employees—as well as an additional 2,500 state and local employees deputized and working under DEA supervision—are responsible for conducting bookings. Within the INS, 7,000 of nearly 40,000 employees are responsible for conducting investigations and 13,000 are responsible for conducting the actual bookings. Additionally, within both components, there are many more employees, other than those who conduct the bookings, who rely upon the booking information to perform their duties.

Figure 4 lists the JABS common "user classes." A user class is a group of individuals who perform similar activities with a similar purpose. These individuals enter and use arrest information from the booking process. Figure 4 also illustrates the business requirements supported by each user class while performing the "Arrest Suspects" business function.

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User Class	Capabilities Required
Booking Agent	Create Data Update Data Query Data
Investigator/Analyst	Query Data
U.S. Attorney	Create Data Query Data
Pretrial Court Office	Create Data Query Data
Probation Court Office	Create Data Query Data
Corrections Officer	Create Data Update Data Query Data
Statistician	Query Data

Figure 4: Department of Justice Booking Process User Classes

3.1.4   Business Functions and Work Locations

The DEA has 350 locations where bookings are conducted. Approximately 100 are electronically linked to IAFIS through JABS. The remaining booking locations are expected to receive the JABS booking stations by the end of FY03. In addition, the DEA has 25 Mobile Enforcement Teams (MET) with the capability of conducting remote bookings in the field and linking via a wireless connection to the FBS.

The INS has approximately 900 locations where bookings are performed. In addition, the INS is currently testing the technical and operational feasibility of using a "Remote IDENT" to provide the border patrol agents with the capability of using a laptop computer in a remote location with a dialup phone line to process apprehensions and book suspects.

The DEA and the INS have many booking locations within the same geographic area. Because crimes tend to be local or regional in nature, it is not uncommon for the DEA and the INS to be investigating the same crimes or to be booking the same suspects concurrently. However, because there are no automated links between their individual booking processes, there is no efficient way for these organizations to share booking information or avoid duplicate data entry.

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3.2 The Data Architecture

The Data View depicts the logical relationships of specific data elements required by the individual business activities that comprise the business process—in this case the booking process. This view analyzes, and attempts to describe, the relationship between the information required (i.e., the data) and the business activities essential to the booking process.

The Department's data view is concerned with the data that supports the missions and strategic goals of all of its law enforcement components' booking processes. While the DEA and the INS have a need for data specific to their respective missions, there is also a common pool of data that all booking agents require. These data elements can be grouped together in the 12 unique categories of data listed below.

- Photos of scars, marks and tattoos
- Vehicle information
- Medical and mental history
- Administrative booking data
- Information on associates
- Information on family members
- Mugshots
- Identifying numbers and documents
- Description of the arrest
- Physical description of the suspect
- Ten-print fingerprints
- Information contained in the FBI response (e.g., arrest history, incarceration data, "rap sheet")

3.2.1 Data Flow of the Components

3.2.1.1 Data Flow for the DEA Booking Process

The DEA collects booking and arrest data through its FBS. Once a booking package has been automatically constructed in FBS, the package is sent electronically to JABS, which repackages the information and submits it electronically to IAFIS. IAFIS responds with an e-mail message to JABS, which in turn, transmits the response with the data to the DEA. Figure 5 depicts the information flow between the FBS and IAFIS.

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DEA Booking Location		JABS		IAFIS
Data Collected		*Data Stored and Shared*		*Data Stored*

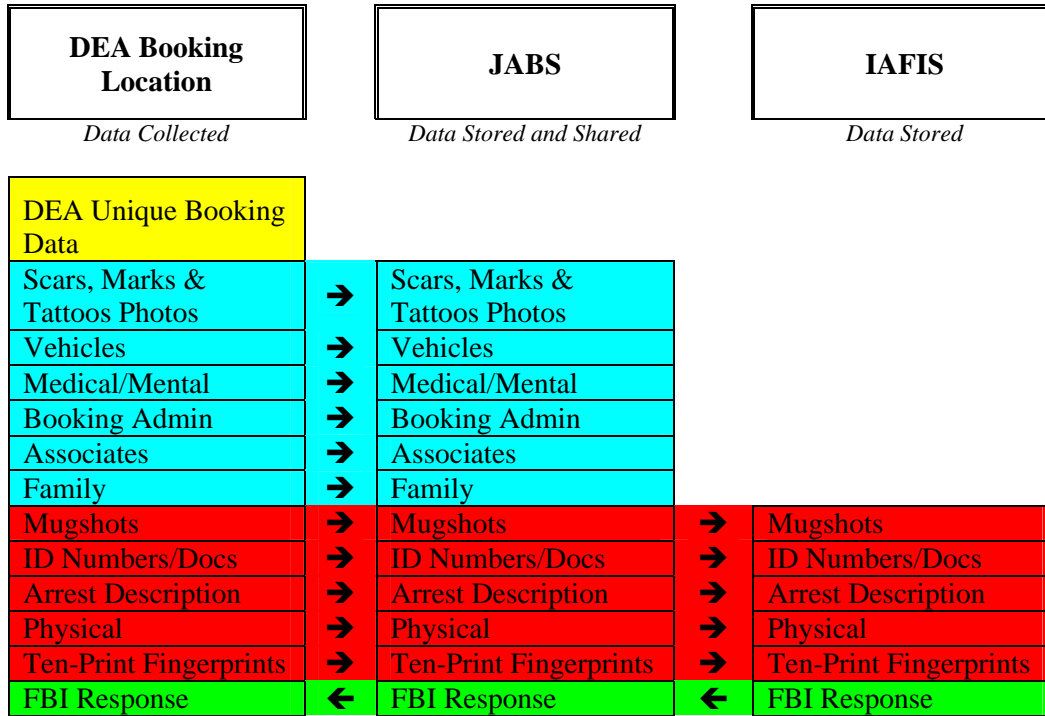| DEA Booking Location		JABS		IAFIS
DEA Unique Booking Data				
Scars, Marks & Tattoos Photos	➜	Scars, Marks & Tattoos Photos		
Vehicles	➜	Vehicles		
Medical/Mental	➜	Medical/Mental		
Booking Admin	➜	Booking Admin		
Associates	➜	Associates		
Family	➜	Family		
Mugshots	➜	Mugshots	➜	Mugshots
ID Numbers/Docs	➜	ID Numbers/Docs	➜	ID Numbers/Docs
Arrest Description	➜	Arrest Description	➜	Arrest Description
Physical	➜	Physical	➜	Physical
Ten-Print Fingerprints	➜	Ten-Print Fingerprints	➜	Ten-Print Fingerprints
FBI Response	⬅	FBI Response	⬅	FBI Response

Figure 5: Data Flow for the DEA Booking Process

Through JABS, the DEA can electronically create a booking package or an inquiry; transmit it to IAFIS for identification; and quickly receive an IAFIS response. By interfacing electronically to JABS, the DEA receives a response from the FBI on average within 2 hours. Prior to the development of an electronic interface, the elapsed time for the DEA to receive the IAFIS response ranged between 6 weeks to 3 months.

In addition, data submitted to JABS is stored in a central data repository where it is available for query or reports by other organizations. This supports the JABS program objective for the facilitation of data sharing among its components.

3.2.1.2 Data Flow for the INS Booking Process

The INS uses a case tracking and booking system, ENFORCE, to capture biographical information related to INS enforcement activities and capture retrievable biometrics through the INS's IDENT. IDENT is a quick screening database that contains index fingerprint records (two-print) both for criminals and non-criminals. ENFORCE accepts electronic forms completed at the various Border Patrol locations. Together, these two systems create the ENFORCE/IDENT Booking Module, which provides data to the INS enforcement data repository and allows the INS Border Patrol to correlate the data supplied by the ENFORCE electronic forms to the biometric information captured by IDENT. For the INS, bookings are conducted on cases that are considered or accepted by the U.S. Attorneys Office for Federal

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prosecution. All other case types are not booked through JABS. Currently, the INS does not have the capability of electronically submitting ten-prints to IAFIS[2]. Therefore, the submission of the booking and arrest data to IAFIS and the subsequent FBI response are manual processes. Ten-print cards are sent predominantly by mail, but occasionally by facsimile, to the FBI for identification and comparison with fingerprint data stored in IAFIS. In contrast to the DEA data flow, Figure 6 shows the information flow between INS and IAFIS.
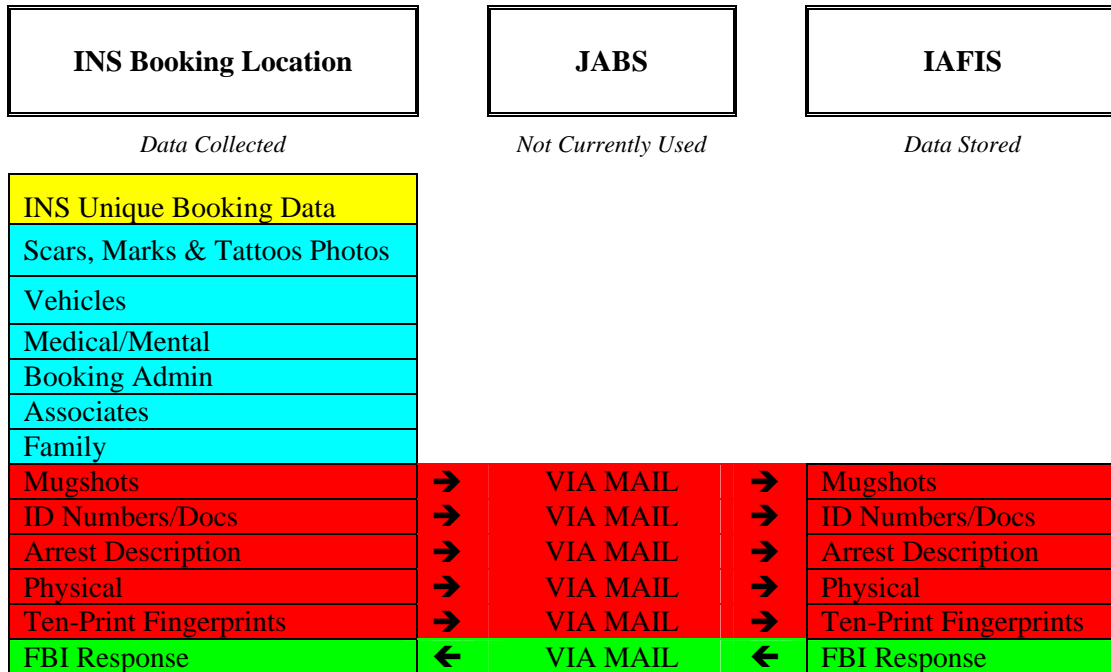
INS Booking Location		JABS		IAFIS
Data Collected		*Not Currently Used*		*Data Stored*
INS Unique Booking Data				
Scars, Marks & Tattoos Photos				
Vehicles				
Medical/Mental				
Booking Admin				
Associates				
Family				
Mugshots	➔	VIA MAIL	➔	Mugshots
ID Numbers/Docs	➔	VIA MAIL	➔	ID Numbers/Docs
Arrest Description	➔	VIA MAIL	➔	Arrest Description
Physical	➔	VIA MAIL	➔	Physical
Ten-Print Fingerprints	➔	VIA MAIL	➔	Ten-Print Fingerprints
FBI Response	←	VIA MAIL	←	FBI Response

Figure 6: Data Flow for the INS Booking Process

Because the INS does not receive a response from the FBI for 6-8 weeks, the INS is not able to use the real-time identification information from the FBI when a subject is first detained. To alleviate problems in this area, IDENT periodically imports "wants and warrants" data from IAFIS. However, because ENFORCE/IDENT does not interface with JABS, the information contained in this database cannot be shared with other components. Conversely, the INS is not able to query the JABS database for relevant data from other organizations.

3.3   Applications Structure Characterization
As discussed in the business characterization (see Section 3.1.2), the Department's booking process is intended to manage data through the six phases of the booking process: create, update, query, component management, JABS management, and technical support. The Department's booking process consists of three major applications: Core JABS, which is the system for collecting and integrating data from all of the Department's component booking processes; the

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[2] The exception to this is a pilot program located in a Brownfield border patrol station.

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DEA's automated booking system (i.e., FBS); and the INS's ENFORCE/IDENT. Figure 7 depicts the JABS activities that are performed by the existing applications.

<u>REQUIREMENTS OF THE BOOKING PROCESS</u>

<u>APPLICATIONS</u>	Create	Update	Query	Component Admin	JABS Admin	Technical Support
Core JABS	✕	✕	✕	✕	✕	✕
DEA Booking Station	✕		✕	✕		
INS Booking Station	✕		Pilot	Pilot		

Figure 7: Department of Justice Booking Process Applications and Business Activities Supported

3.3.1   Core JABS Applications Structure

JABS is designed to provide for rapid identification of criminals via the FBI's IAFIS. The system provides real-time information sharing for investigations; eliminates the need for data-entry redundancies and manual, paper-intensive processes; and establishes a tracking capability for individuals held in Federal custody. Within this process, JABS sends up to three messages to the booking station submitting the package. The first message simply indicates that JABS has received the submission. The second message indicates that the package was forwarded to IAFIS. The third message provides the response returned from the FBI with an attached FBI identification record, if available. The FBI maintains information records on more than 24 million persons. For each individual for whom criminal justice information is submitted, the FBI's Criminal Justice Information Services Division compiles an identification record, or "rap sheet." A rap sheet reflects information regarding arrests, convictions and other dispositions when known, and incarcerations.

To improve maintainability, the application architecture relies mostly upon commercial off-the-shelf (COTS) products and encourages a minimal use of development software. The purpose of JABS customized software is to integrate the COTS applications.

3.3.2   DEA Applications Structure

As shown in Figure 7, the DEA application supports all of the booking process business activities. FBS workstations are directly interfaced to JABS, allowing booking data to be electronically transmitted to IAFIS through the JABS server. Data is stored on the JABS server so that the DEA booking data is available to other JABS-capable entities within the DEA, and can be queried, printed, and exported.

3.3.3   INS Applications Structure

As stated earlier, the INS primarily uses its ENFORCE system to capture booking data (e.g., Border Patrol processes over 99 percent of their apprehensions through ENFORCE). ENFORCE is an automated system that is linked to IDENT and is used extensively in the field. Together,

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this is known as ENFORCE/IDENT. IDENT is used to identify an individual based on internal INS data and the FBI's "wants and warrants" fingerprint files, which are periodically imported into IDENT.

Because the INS booking process is not linked to Core JABS through an electronic interface, the INS booking data is not available to other law enforcement components and cannot be queried, printed, or exported by JABS. The INS does not store ten-print records within ENFORCE/IDENT, although it does have a means to extract the two-print index finger impressions from the ten-print file and store this information in its database.

3.4   Current Technology Baseline
For purposes of this document, the technology of the Department's booking system is the total of the technology of Core JABS, the DEA's FBS, and the INS's ENFORCE/IDENT.

3.4.1   Core JABS Technology Baseline
Core JABS consists of two server-class machines on a network segment. The Local Area Network (LAN) is connected to the Department's Justice Consolidated Network (JCN) via a firewall. The Unix server is a Hewlett Packard (HP) 9000/800 N4000 series that serves as a host for the JABS database and Web server. The Microsoft (MS) NT server is a PL5500-RXN500 Compaq server that hosts the JABS e-mail application. Both servers have redundant critical subsystems including system disks, power supplies, Central Processing Units (CPU), and cooling fans.

JABS services reside on a protected subnet, which is connected to each of the components' networks and the Department's intranet via a Virtual Private Network (VPN). JABS is installed at the Justice Data Center (Rockville, Maryland). The architecture consists of a server and associated peripherals hosting the Oracle database management system that provides the data repository, security, and audit, and transactional services. JABS printers are managed by the JABS system administrator and must be registered with the administrator.

3.4.2   DEA Technology Baseline
At the DEA, biometric and biographic data captured on the FBS client during the booking process is sent to the JABS Mail Server via a Simple Mail Transfer Protocol (SMTP) transaction. The JABS Mail Server sends the information to IAFIS, which processes the SMTP message when it arrives. Likewise, IAFIS responds to the FBS client with an SMTP message containing the suspect's identification information (i.e., "rap sheet") included as an attachment to the message. The DEA FBS architecture consists of a distributed client segment and a centralized server segment that are connected via a wide area network (WAN).

3.4.3   INS Technology Baseline
The INS booking data is mailed to the FBI, or on rare occasions submitted electronically to IAFIS through a facsimile transfer to an FBI secure fax machine. At the FBI, the fingerprint data is manually compared with records stored in IAFIS. As was noted earlier, this process can take up to 2 months before INS will receive a response.

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INS does have a database that is centrally located at the INS Headquarters (HQ) in Washington, DC, which currently contains biometric data on individuals it detains. Each ENFORCE/IDENT client connects directly into the central site login server for all transaction requests. However, the type of network access varies by area: LAN, INS WAN, or NetBlazer to INS WAN. Once the initial connection is established, all INS clients have access to the same fingerprint database. The centralized database gives INS clients access to up-to-date biometric information.

3.5 Summary of the "As Is" Model

The mission of the Department's booking process is to enable its law enforcement components to share booking data; facilitate the rapid identification of suspects through IAFIS; and track Federal offenders. While JABS has been developed to provide these capabilities, only DEA has a process in place to use the JABS' capabilities. As a result, the mission, as stated, is only partially fulfilled.

The DEA is able to take advantage of the ability of the system to provide rapid identification of suspects through IAFIS. Through JABS, IAFIS provides a response to the DEA within 2 hours of its original submission. Because the INS submission process is not automated, it can take up to 8 weeks to receive a response from IAFIS. This operational inefficiency may hinder on-going investigations or may allow offenders to be prematurely released due to the lack of reliable and timely data.

Since the DEA is the only component with an electronic interface to IAFIS, neither organization is able to share the booking data efficiently. Although they often work closely together; implement similar processes; investigate the same cases; use the same equipment and facilities; and appear before the same Federal magistrates; each law enforcement component often processes cases separately because of this inability to share data. This duplication of effort places a strain on data entry, booking procedures, and resources.

4.0 The "To Be" JABS Enterprise Architecture Target Model

4.1 The Target Business Model

The focus in the target business segment analysis will be on the activities associated with the booking process and its related functions. After developing the target business and data models, the information will be analyzed to determine a target application structure and the supporting "To Be" technology.

4.1.1 The Department of Justice Business Model

The enterprise level business model for the Department[3] has three business areas: Enforcement Operations, Justice Services, and Corporate Services, which are further decomposed into business functions. Figure 8 demonstrates how the major functions of the Department combine

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[3] U.S. DOJ, Information Resources Management, *U.S. Department of Justice Enterprise Business Architecture*, December 17, 2001.

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to achieve the strategic goals of the Department. The depiction is based on a widely accepted model—the Michael Porter Value Chain. The small scope of the business segment being analyzed (i.e., booking) does not allow for a true value chain analysis. However, it can be surmised from Figure 8 how an efficient booking process can contribute immensely to the overall objectives of the rapid identification of suspects; the sharing of common information among all law enforcement components; and the tracking of Federal offenders.

The upper section of the model displays the Department's support functions. These functional areas work together to achieve the Department's overall strategic goals. The lower section represents the "line" or direct business functions of the Department. The *Arrest Suspects* business function, which is highlighted under the Enforcement Operations business area, is the primary function that is supported by the booking process.
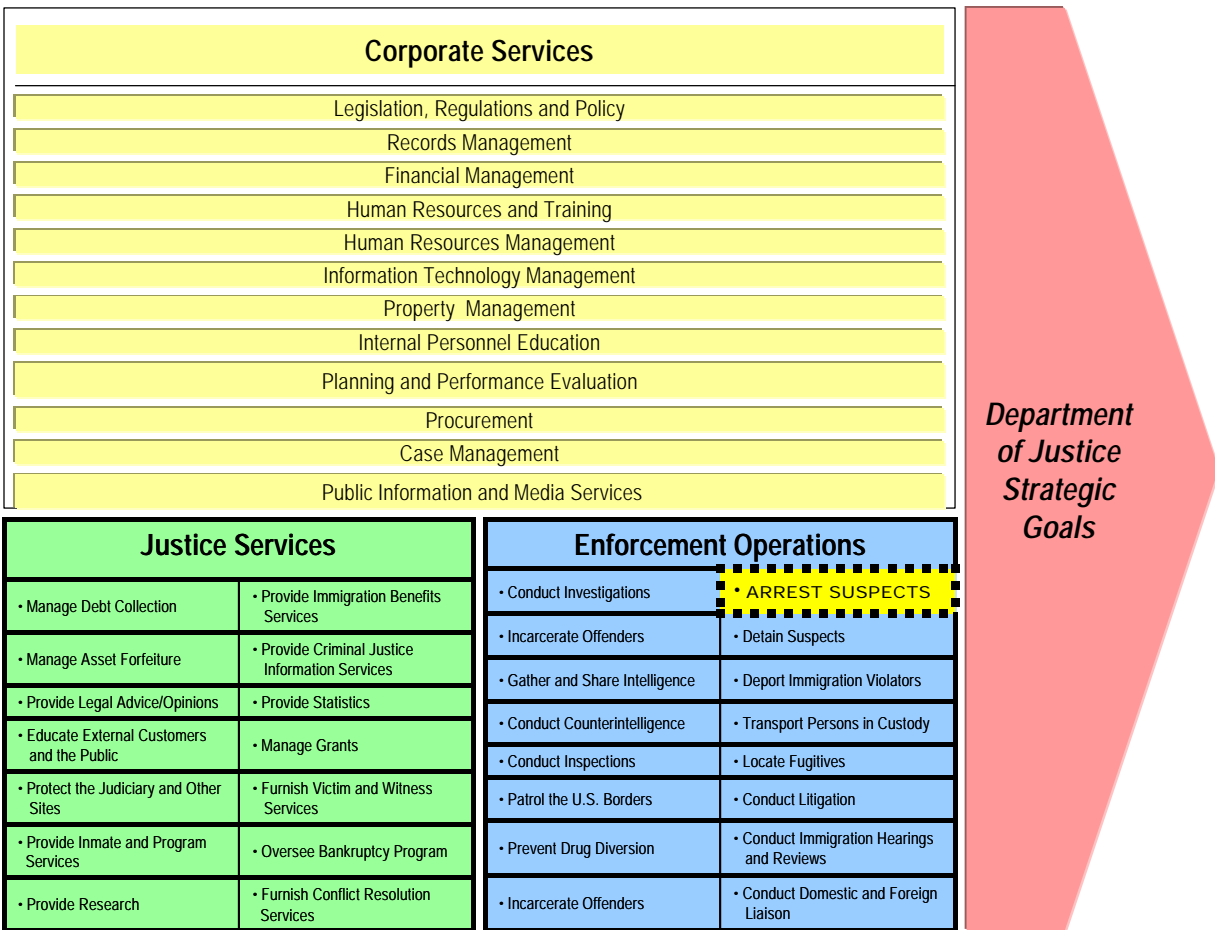

Figure 8: Department of Justice Value Chain

4.1.2 Overview of the Department of Justice Target Arrest Function

The Department has five law enforcement components that share responsibility for arresting suspects: Bureau of Prisons (BOP), DEA, FBI, INS, and United States Marshals Service

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(USMS). A judicial case is initiated for any number of reasons, such as suspicion of wrongdoing, informant tip, intelligence, regulatory compliance audit, or arrest. Once a case is initiated, agents, analysts, investigators, and other personnel may perform additional functions as the case is developed. One such function may be an arrest[4].

The FBI, the DEA, and the INS are three of the components responsible for supporting the arrest function of the Department. While these components have different missions and goals, they perform many of the same business functions, processes, and activities. Each law enforcement component conducts a business function called *Arrest Suspects* and must capture and utilize certain offender information to perform their mission effectively.

4.1.3 The Target Booking Process

An important part of the "business" of any Federal law enforcement component is the rapid and positive identification of individuals under Federal arrest or detention. This requirement is driven by the mission of the *Enforcement Operations* business area, as well as, many of the Department's strategic goals. As shown in Figure 9, a process subordinate to the *Arrest Suspects* function is the booking process. This process consists of six activities.
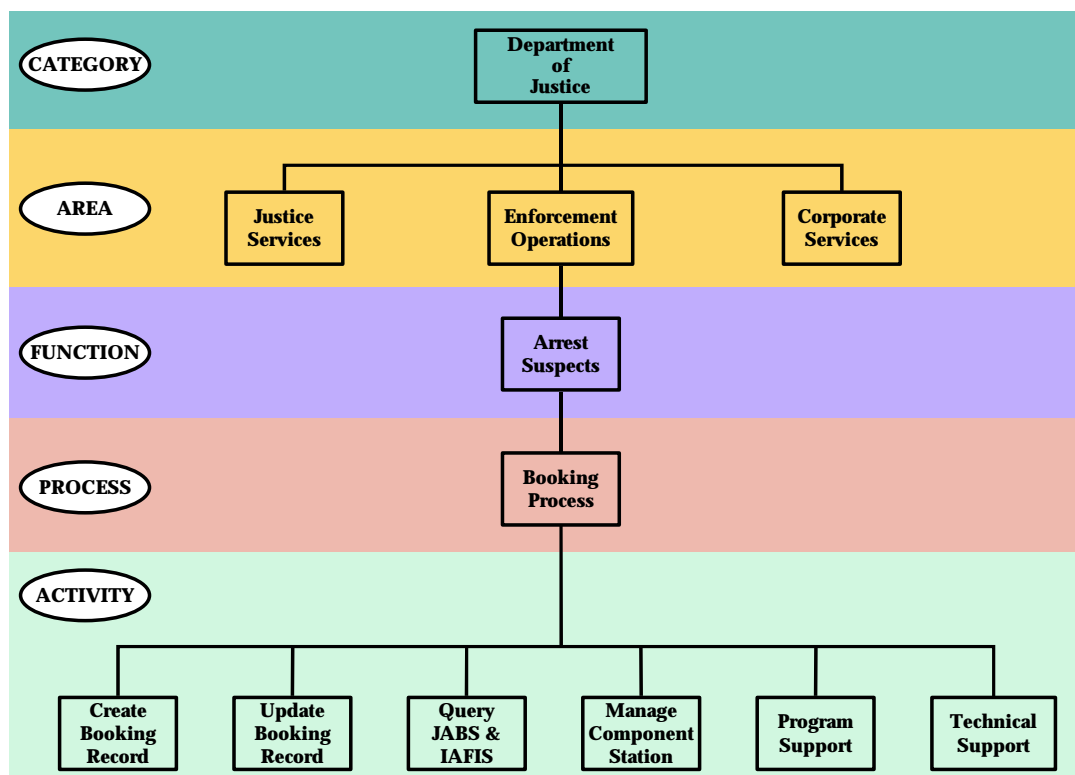

Figure 9: The Business Structure of the Department of Justice

[4] Taking an individual(s) into legal custody based upon observed offenses, probable cause, or prior warrants, and taking possession of all materials related to suspected criminal actions.

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During the booking process, the arresting agent creates a record of the offense and biographical data on the offender; produces mug shots and evidentiary photographs; and captures the fingerprints of the offender for identification purposes and transmittal to the FBI.

4.1.4   The Target Booking Business Activities

The first step in developing the business architecture was to decompose the booking process into its key or high-level activities. When the decomposition process was complete, all the lowest level activities were identified. They represent unique activities that manipulate the data required to perform the booking process. Figure 10 lists the final or lowest level business activities associated with the target booking process.

Activity Name	Activity Description
Component Activities	
Create a New Booking Record	This activity begins when the determination is made to "detain" a suspect. Booking information (e.g., identification numbers, personal information, fingerprints) is collected and input into the component level booking station. Once the data has been reviewed for accuracy and compliance with JABS standards, the "create" record is submitted to JABS. This activity ends when a verified IAFIS response has been received by the component.
Update an Existing Booking Record	This activity begins when a component has new or updated information pertaining to an existing booking record. The information is input into the component level booking station. This activity ends once the data has been reviewed for accuracy and compliance with JABS standards and the "update" record is submitted to JABS.
Query JABS and IAFIS for Existing Booking Information	This activity begins when a component has new or updated information that requires further investigation. The component must first determine the scope of the query (e.g., need additional information, determine detention location, view rap sheet). Subsequently, the "query" record is input into the component level booking station. Once the data has been reviewed for accuracy and compliance with JABS standards, the "query" record is submitted to JABS. When the requested information is returned, the component will review and analyze the information. This activity ends when the component determines the action, or next steps, required as a result of the analysis.

Figure 10: Booking Process Business Activities

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Activity Name	Activity Description
Component Activities	
Manage the Component Level Booking Station	This activity begins when a Component receives new or revised Department standards, policies, or procedures related to the booking process. This can include technical interface information. All aspects of program management (e.g., System Development Life Cycle (SDLC) management, budget issues, system status) and technical management (e.g., operational system deployment, component level infrastructure, database administration) are included in this broad category. Operational support and maintenance are additional sub-activities. This activity ends when all operational systems have been disposed of and the project is transitioned or closed-out.
JABS Management Activities	
Provide Department-wide Program Management for JABS	This activity begins when the Department receives funding and approval to manage a Department-wide automated booking process. The Department establishes program standards, policies, and procedures related to the booking process. All aspects of program SDLC management, budget issues, system status) are included in this broad category. The Department continually monitors the project to ensure that JABS is meeting its overall performance measures and that it contributes effectively to the accomplishment of the Department's strategic goals. Enhancements to the system are managed using these goals as the basis for priority (e.g., desire to create a Federal Offender Tracking System). This activity ends when all operational systems have been disposed of and the project is transitioned or closed-out.

This document contains information that serves the purpose of demonstrating an example of a segment architecture and does not reflect the current JABS program in its entirety.

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Provide Department-wide Technical Support for JABS	This activity begins when the Department receives funding and approval to manage a Department-wide automated booking process. The Department establishes technical standards related to the booking process. All aspects of technical management (e.g., operational system deployment, component level infrastructure, database administration) are included in this broad category. The Department continually monitors the project to ensure that JABS is meeting its technical performance measures. This activity ends when all operational systems have been disposed of and the project is transitioned or closed-out.

Figure 10: Booking Process Business Activities (Cont.)

4.2 The Target Data Model

The purpose of the data architecture is to identify the data required to successfully and efficiently accomplish the target business activities described above. Additionally, the creation and manipulation of the data is analyzed to determine the prevalent data flow.

4.2.1 The Target Booking Process Data Entities

Figure 11 depicts the major data entities used in the Department's booking process. The target data entities were selected for inclusion based on the activities outlined in the business model (see previous section). Data requirements are derived solely from business activities and are not related to who uses the data, where or when the data is used, or any current applications or technology solutions. Each of the data entities has at least one unique attribute that can be used to distinguish the different occurrences of that entity. For example, a *Subject* will have an identifying number or document; or an *Arresting (Booking) Officer* will have a unique badge number or employee number to distinguish different arresting officers within the Department.

Data Entity	Description	Attributes
Arrest Event	An act of taking an individual into custody resulting in, or from, the formal charging of an individual for a violation of the law (not an immigration law)	Arrest description
Arresting (Booking) Officer	A Department or Component employee (or deputized official) who takes a subject into custody and creates a booking package	Arresting officer's identifying information
Associate	An individual who is known to the subject, but is not related, and associated with the arrest event	Associate's identifying information

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Biometrics	A biological characteristic of a person that can be used for identification or verification	Ten-print fingerprints
Booking Event	An act of collecting information about a subject that results in the creation of a booking package	Booking administration information
Detention Location	A room or building where persons are held in custody	Location code
FBI Identification Record "Rap Sheet"	A document containing the chronology of a subject's arrest and incarceration history	FBI identification record
Judicial Case	A case related to the administration of penal or criminal law	Case number

Figure 11: Booking Process Data Entities

Data Entity	Description	Attributes
Subject	A person who is the focus of an arrest or booking event	Mugshots, physical descriptions, Scars, Marks, and Tattoos (SMT) photos, medical/mental history, family members, identifying numbers and documents
Technology Resources	A system, technique, or technology asset used to automate business functions, processes, and activities (This includes Enterprise Architecture)	Hardware, software, network, infrastructure, and applications
Vehicles	A device or structure for transporting persons or items	Vehicle description and identifying numbers

Figure 11: Booking Process Data Entities (Cont.)

4.2.2   Relationship of Activities and Data Entities

The table displayed in Figure 12 depicts the relationship between the target business activities defined in Section 4.1.4 and the target data entities listed in Section 4.2.1. The matrix identifies what actions an activity performs on the data element. For the purposes of this analysis, an activity can create (C), update or modify (U), reference or query (R), or delete (D) the target data entity. These relationships are important for determining the sequencing of the new applications, which will become an important basis for prioritizing available funds. It is necessary to design and build the applications that create the data entity prior to those applications that update or reference those same entities.

This document contains information that serves the purpose of demonstrating an example of a segment architecture and does not reflect the current JABS program in its entirety.

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Business Activity Names	Arrest Event	Arresting (Booking) Officer	Associate	Biometrics	Booking Event	Detention Location	FBI ID Record "Rap Sheet"	Judicial Case	Subject	Technology Resources	Vehicles
Component Level Activities											
Create a New Booking Record	R*	R*	C	C	C	R*	C	R*	C		C
Update an Existing Booking Record	R	R	RUD	RUD	RUD	R	RUD	R	RUD		RUD
Query JABS/IAFIS for Existing Booking Information	R	R	R	R	R	R	R	R	R		R
Manage the Component Level Booking Station										CRUD	
Department-Level Activities											
Provide Department-wide Program Management for JABS										CRUD	
Provide Department-wide Technical Support for JABS										CRUD	

Legend: C - Create, R - Reference, U - Update, D - Delete

* Some data entities are created by activities that are out of the scope of this analysis

Figure 12: Booking Process C-R-U-D Matrix

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Segment Architecture Analysis of the Law Enforcement Booking Process

4.3 The Target Application Model

The purpose of the application architecture is to define the major and significant applications needed to manage the data entities and support the business functions of the Department. It is not intended to provide detailed system design or a requirements analysis, but rather to provide an analysis of what applications will do to help manage the data. Figure 13 provides a list of the target applications for the Department's booking process. A brief description of the applications is included along with the supported requirements and objectives. The logical relationship of these target applications is provided in Figure 14.

Application Name	Description of Application	Activities Supported	Objectives Supported	Status
Core JABS	A conduit and central control module for Department booking process	Create Submit Update Query JABS Program Mgmt JABS Tech Mgmt	Automate Booking Process Share Booking Data Track Federal Offenders	Existing
Offender Tracking Module (JABS)	A searchable database for data about Federal offenders	Update JABS Program Mgmt JABS Tech Mgmt	Track Federal Offenders	New
Latent Fingerprint Processing Module (JABS)	Allow fingerprint matching based on latent fingerprints	Update Query	Automate Booking Process Share Booking Data Track Federal Offenders	New
Update Transaction Processing Module (JABS)	Allow updates to suspect records without triggering a response from IAFIS	Update	Share Booking Data Track Federal Offenders	New
Security Upgrade Module (JABS)	Enhance the security features of JABS	JABS Program Mgmt JABS Tech Mgmt	Automate Booking Process	New
IAFIS	Stores biometric and criminal history data	Query	Automate Booking Process Share Booking Data Track Federal Offenders	Existing
Component Booking Stations	A central control module for component booking process	Create Update Query Component Sys Mgmt	Automate Booking Process Share Booking Data	New

Figure 13: Application Matrix for Booking Process

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Application Name	Description of Application	Activities Supported	Objectives Supported	Status
DEA/JABS Interface Module	A central control module for DEA booking process	Create Update Query Component Sys Mgmt	Automate Booking Process Share Booking Data	Existing
SENTRY/ JABS[5]	A central control module for BOP booking process	Create Update Query Component Sys Mgmt	Automate Booking Process Share Booking Data	New
FBI/JABS[5]	A central control module for FBI booking process	Create Update Query Component Sys Mgmt	Automate Booking Process Share Booking Data	New
Prisoner Tracking System/ JABS[5]	A central control module for USMS booking process	Create Update Query Component Sys Mgmt	Automate Booking Process Share Booking Data	

Figure 13: Application Matrix for Booking Process (Cont.)

[5] These applications are outside of the scope of this segment analysis, but are part of JABS, Version 2.0.

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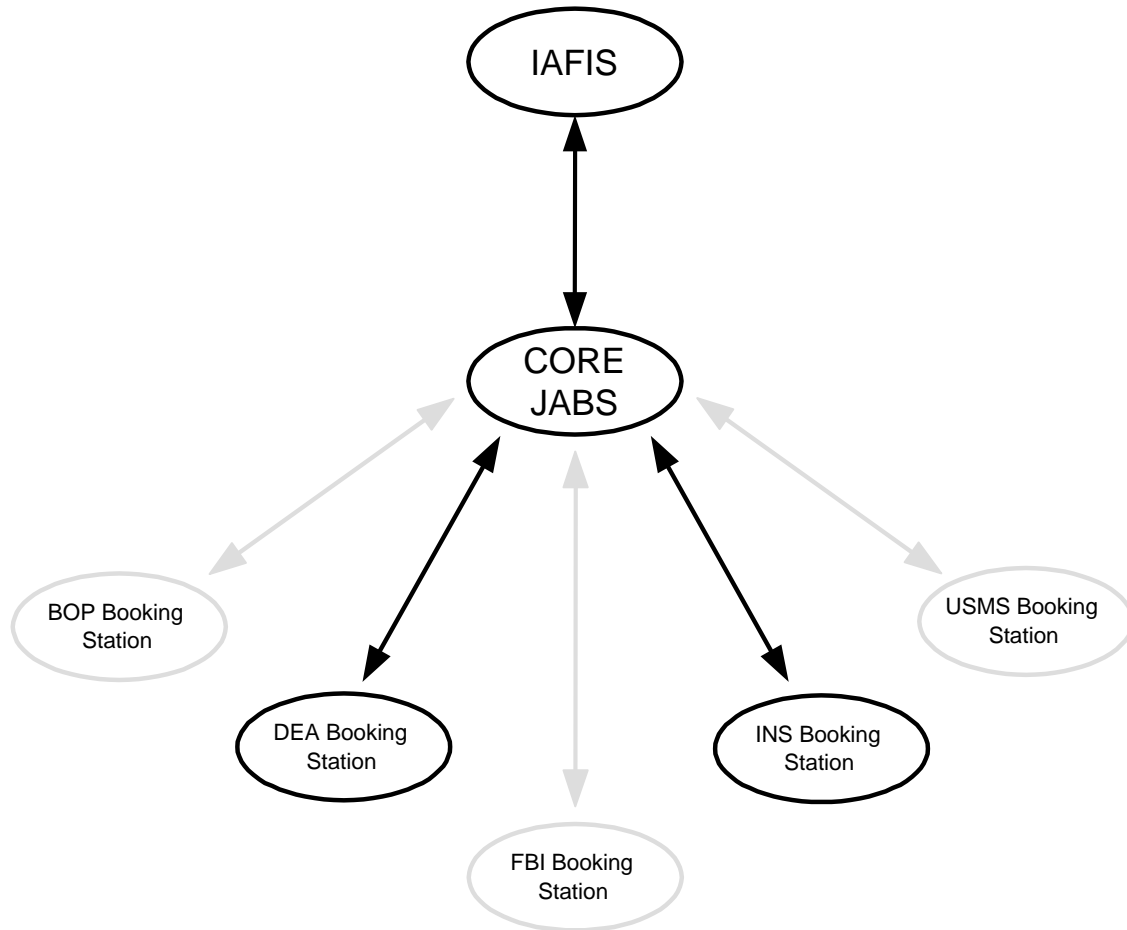**Segment Architecture Analysis of the Law Enforcement Booking Process**

Figure 14: Logical Relationship of Target Booking Process Applications[6]

4.4 The Technology Model

A tenet of the JABS technology architecture is that each component's booking process is independent. Each component will establish a strategy that meets its own mission and technical requirements. In order to support both the components' missions and the Department-wide mission, the components will need to establish booking stations that include:

Pentium class workstations

Ten-print fingerprint devices

Digital cameras

Scanners

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[6] The grayed sections are outside of the scope of this segment analysis, but are part of JABS Version 2.0.

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Segment Architecture Analysis of the Law Enforcement Booking Process

Printers

JABS provides transport and validation services for submitting fingerprints to IAFIS and passing any results back to their submitter. In order to fulfill these requirements, the JABS technology architecture will consist of the following items:

- VPN switch

- IDS analysis reduction tool

- Router

- Ethernet switch

- Firewall

-

JABS will also provide a searchable repository to be used by the components in pursuit of their strategic goals. The technology architecture supporting that requirement will consist of two server class machines on a network segment. In order to meet operational requirements, it will have redundant critical subsystems including:

- System disks

- Power supplies

- CPUs

- Cooling fans for high reliability operations

The diagram displayed in Figure 15 shows how these individual Components interact to form the basic "system" called JABS.

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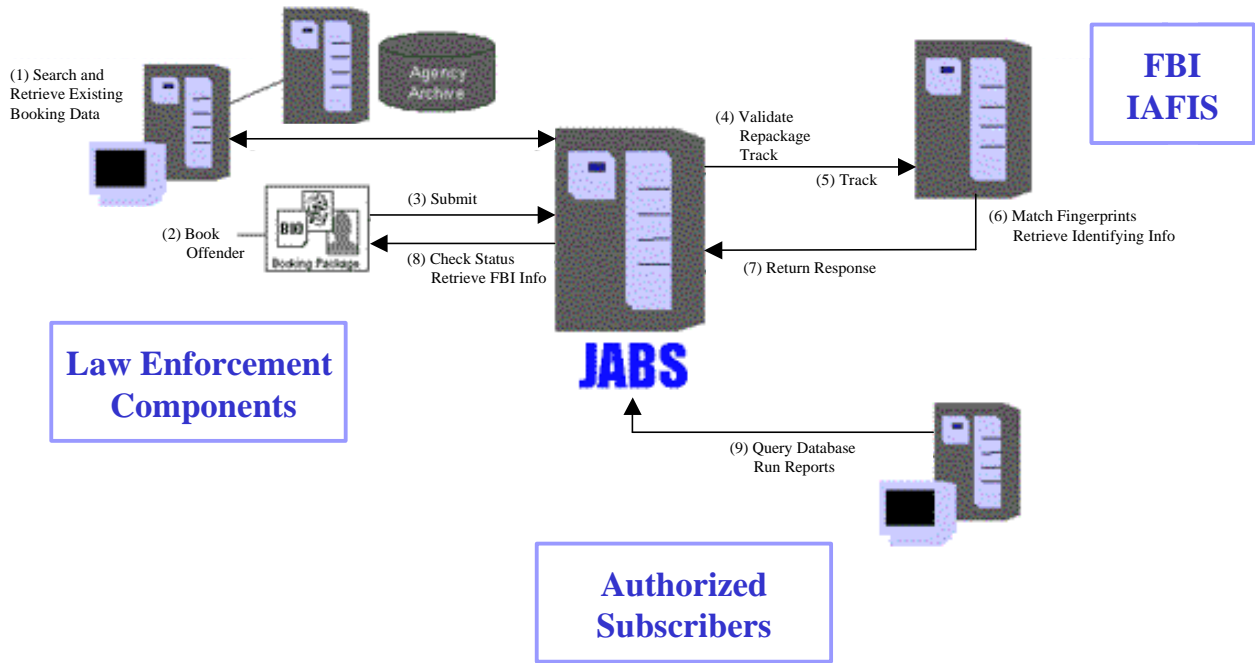**Segment Architecture Analysis of the Law Enforcement Booking Process**

Figure 15: Automated Booking Workflow

4.5   Summary of the "To Be" Model

The target business, data, applications, and technology architectures above will allow the Department to design and implement a booking process that will enable its law enforcement components to share booking data; facilitate the rapid identification of suspects through IAFIS; and track Federal offenders. When complete, all of the Department's law enforcement components will have an automated booking station, riding a robust infrastructure, to create the booking data repository.

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PART II: Analysis of the Architectural Model

5.0 GAP ANALYSIS

5.1   Summary of Analysis
The segment analysis identified three goals of the Department's booking process: to enable the Department law enforcement components to share booking data; to facilitate the rapid identification of suspects; and to develop a means to track Federal offenders. The current architecture does not support these goals primarily because the INS submission process has not been automated. The target architecture, however, would accomplish these goals and allow for an effective and efficient automated booking process. The residual effect of fully automating this process would be to allow the law enforcement components to share booking data and, as such, would be the first step toward establishing a Federal offender tracking system.

The following list outlines the major enhancements that would have to be addressed to migrate from the *Current* to the *Target* architecture.

- Fully develop the component booking stations to allow for the automated collection and submission of booking data to IAFIS through JABS

- Modify Core JABS to allow components to update existing booking data records   (i.e., modify the Core JABS Booking Record Update process to allow updates to JABS booking records without always triggering a transaction to IAFIS)

- Modify Core JABS to upgrade the security infrastructure with enhanced user authentication and data encryption to the user workstation

- Modify Core JABS to provide the ability to process latent fingerprint transactions

- Modify Core JABS to contain the initial functionality to position JABS as a conduit for a Federal offender tracking system

5.2   Constraints and Limitations
The following are potential constraints and limitations to achieving the major enhancements.

- Changing Department and Component priorities

- Hiring a sufficient number of analysts to complete the development work

- Training a large number of employees

- Completing infrastructure upgrades to accommodate additional traffic

- Retaining the autonomy of each component's booking system

- Collecting and submitting relevant criminal history information to the JABS in a timely manner (must avoid significantly increasing the time required by the INS to process aliens)

This document contains information that serves the purpose of demonstrating an example of a segment architecture and does not reflect the current JABS program in its entirety.

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- Recognizing that Components may have competing or contradictory technical requirements
- Having sufficient funds available

5.3 Operational Requirements

Any enhancements or modifications of JABS must meet the following list of target operational requirements:

- The system should be available continuously (i.e., 24/7/365)
- Core JABS should process a valid booking transaction within 2 minutes
- IAFIS should, on average over a 30-day period, return a response to JABS within 2 hours
- The system should be scalable to accommodate an increasing number of bookings
- All data records should be stored for 99 years (or as determined by the JABS PMO)
- The system should support the printing of Core JABS data and fingerprint cards from component printers (components will control the capability of configuring their own printers)

5.4 Mitigating Actions

- The following list provides possible mitigating actions that can be considered when developing a detailed strategy for transitioning from the "As Is" to the "To Be" architecture.
- Prioritize the applications and sequence the projects to span multiple fiscal years
- Use FBS as a strawman model, to avoid costly and time-consuming research and development
- Use existing JABS Application Program Interface (API) in IDENT/IAFIS workstations
- Integrate JABS training into existing training programs
- Coordinate the deployment of JABS booking stations to coincide with component infrastructure improvements

5.5 Additional Benefits

The following are additional benefits derived from the completion of the target architecture:

- All law enforcement components will have the ability to identify individuals with "wants and warrants", criminal records, and previous INS encounters based on real-time data
- A fully deployed JABS will facilitate the collection and development of arrest metrics
- Reduce the likelihood that criminals will be unwittingly released from custody
- Provide Federal, state, and local law enforcement organizations with an integrated picture of the criminal activity known to components of the Department, including INS encounter histories of persons who have illegally crossed the border

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This document contains information that serves the purpose of demonstrating an example of a segment architecture and does not reflect the current JABS program in its entirety.

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6.0 TRANSITION PLAN

6.1   Sequencing Considerations
The following elements were considered in developing the sequencing of the new applications outlined in the transition plan:

▪ Business Priorities – Impact on achieving the program goals of JABS

  ▪ Facilitate the sharing of information

  ▪ Reduce the time needed to identify suspects

  ▪ Improve the ability to track Federal offenders

▪ Data Dependency – The phase of the data lifecycle that is affected (i.e., C-R-U-D)

▪ National Security – The likelihood that criminals will be identified and detained

▪ Congressional Directives – The level of political sensitivities or direction (e.g., 1999 Congressional directive to integrate the fingerprint systems of FBI and INS[7])

These sequencing considerations are used to create a priority scheme for the design, development, and deployment of system enhancements as seen in Figure 16.

SEQUENCING CONSIDERATIONS

ENHANCEMENTS	Business Priorities	Data Dependency	National Security	Congressional Directives
Component Level				
Component Booking Stations	**High**	**High**	**High**	**High**
Core JABS				
Offender Tracking	**High**	**High**	**High**	**Medium**
Process Latent Fingerprints	**High**	**High**	**High**	**Low**
Process Update Transactions	**High**	**High**	**Medium**	**Low**
Upgrade Security of System	**High**	**Medium**	**Medium**	**Medium**

Figure 16: Sequencing Considerations for JABS Enhancements

[7] The FY2000 House Appropriations Report expressed the belief that Federal, state, and local law enforcement should have access to INS fingerprint information and that the INS should have the full benefit of FBI criminal history records. The House report directed that INS suspend further deployment of IDENT until DOJ submitted to the Committee a plan for integration of IDENT and IAFIS. The subsequent conference report retained the provision.

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6.2   Transition Plan

Through analysis of the sequencing priorities as depicted in the previous table, a summary transition plan can be developed which mirrors the priority scheme. Figure 17 outlines the individual milestones that would allow the Department to transition from the current or "As Is" architecture to the target or "To Be" architecture. The project would be bounded by the constraints, limitations, and operational requirements discussed in Sections 5.2 and 5.3. However, this plan serves as an initial blueprint that can be used by those who will be tasked in the future with making funding and development decisions.
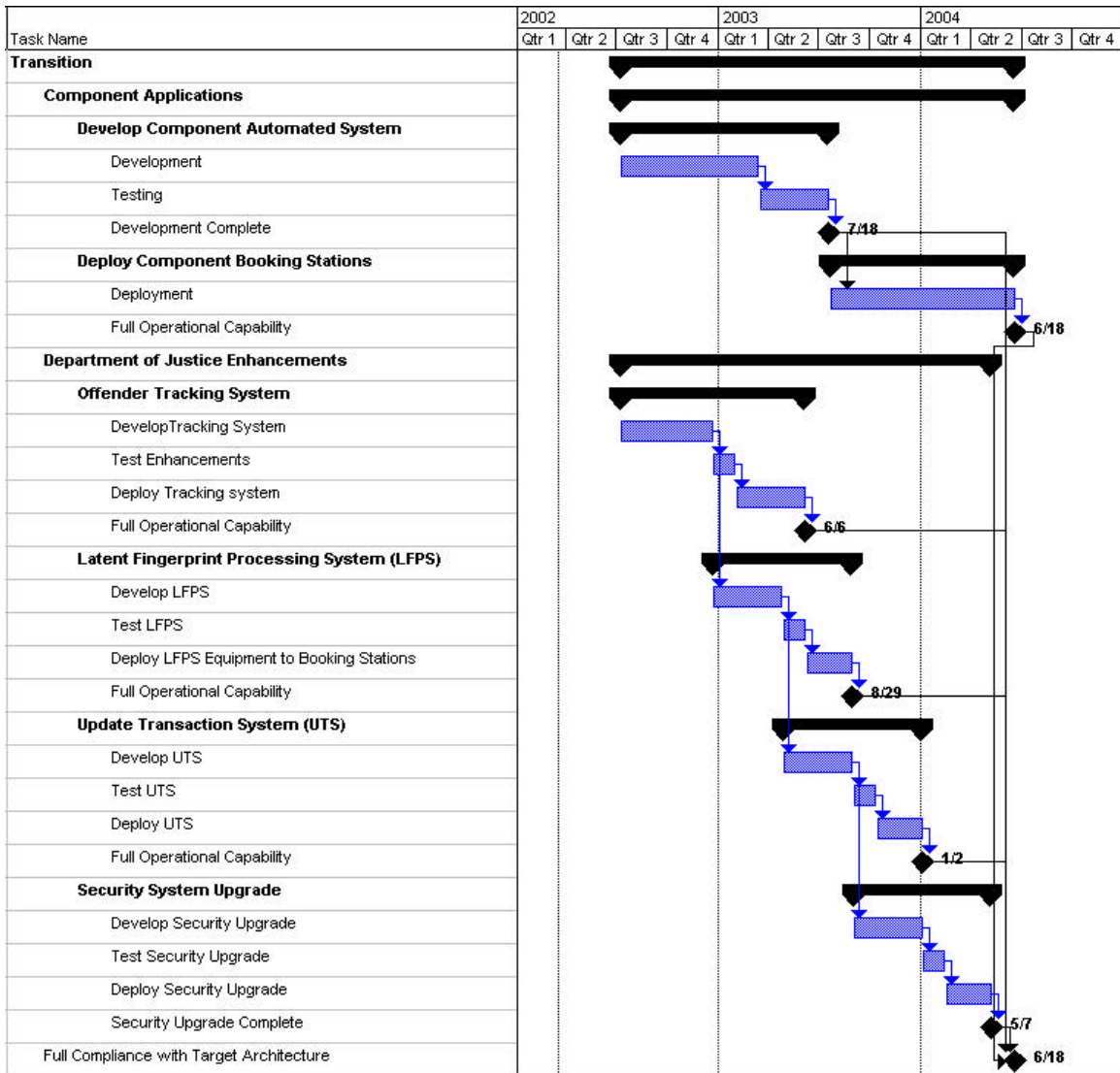

Figure 17: Summary Transition Plan

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GLOSSARY OF GENERAL ENTERPRISE ARCHITECTURE TERMS[8]

APPLICATION ARCHITECTURE	A component of the design architecture that defines the major applications needed to manage data and support business functions.
BUSINESS ARCHITECTURE	A component of the current and target architectures which relates to the enterprise mission and goals. It contains the content of the business models and focuses on enterprise business areas and processes responding to business drivers. The business architecture defines enterprise business processes, enterprise information flows, and information needed to perform business functions.
CURRENT ARCHITECTURE	The current state of an enterprise's architecture. The "As Is" model is the representation of the cumulative "as-built" or baseline of the existing architecture.
DATA ARCHITECTURE	A component of the design architecture. The data architecture consists of among others, data entities, which have attributes and relationships with other data entities. These entities are related to the business functions.
GAP ANALYSIS	The process whereby an enterprise identifies, and determines the effort required to correct gaps or deficiencies between its desired (target) architecture and its actual (current) architecture.
SEGMENT ARCHITECTURE	An abridged enterprise architecture analysis that focuses on only one "segment" or business area of the enterprise. A segment architecture document should provide sufficient information to guide investment decisions and system designs within the segment.
TARGET ARCHITECTURE	The target state of an enterprise's architecture. The "To Be" model is the representation of a desired future state or "to-be-built" for the enterprise within the context of the strategic direction.
TECHNOLOGY ARCHITECTURE	The physical depiction of the technology environment for the enterprise showing actual hardware and systems software at the nodes and lines and their systems software, including operating systems and middleware.

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[8] These definitions were derived from a variety of Federal CIO Council documents.

This document contains information that serves the purpose of demonstrating an example of a segment architecture and does not reflect the current JABS program in its entirety.

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TRANSITION PLAN	The blueprint or plan that helps an enterprise to bridge the gap between its "As Is" and "To Be" models. The plan should identify the required transition activities, the priorities, and the milestones/timelines.

This document contains information that serves the purpose of demonstrating an example of a segment architecture and does not reflect the current JABS program in its entirety.

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