



Department of Justice  
Federal Bureau of Investigation

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**FEDERAL BUREAU OF INVESTIGATION (FBI)  
CRIMINAL JUSTICE INFORMATION SERVICES (CJIS)  
ELECTRONIC BIOMETRIC TRANSMISSION  
SPECIFICATION (EBTS)**

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## CHANGE HISTORY SECTION

Version/ Revision	Revision Date	Description Of Change	QA Approved	Date
9.3	12/9/2011	<p>General:</p> <ul style="list-style-type: none"> <li>• Removed Latent functionality that will not be carried forward in NGI: CFS, ELR, NAR, LSMQ, &amp; LSMR, ULAC.</li> <li>• Reworded Section 3.4.2 Latent Print Investigation for the added NGI functionality and changes being made.</li> <li>• Added more wording to new functionality being offered by NGI</li> <li>• Updating certain places to be conformant with ANSI/NIST-ITL 2011.</li> <li>• Updated functionality being offered in NGI Increment 3 by changing 'Future Capability' to 'NGI Increment 3' for those items.</li> </ul> <p>Section 3.1.1:</p> <ul style="list-style-type: none"> <li>• NGI will be enrolling palmprints and supplemental fingerprint and palmprints included on Tenprint Identification Submissions</li> </ul> <p>Section 3.1.2:</p> <ul style="list-style-type: none"> <li>• NGI will be allowing additional record types on the Latent Identification Submissions, taking over functionality of CFS &amp; ELR</li> <li>• Including 'inconclusive' result to also be returned</li> </ul> <p>Section 3.1.3:</p> <ul style="list-style-type: none"> <li>• Expanding RPIS to be used by CBP for rapid searching of the criminal repository.</li> </ul> <p>Section 3.1.3:</p> <ul style="list-style-type: none"> <li>• Including in the response to CBP rapid search only 'Red' or 'Green'</li> </ul> <p>Section 3.3.1:</p> <ul style="list-style-type: none"> <li>• Updated IRQ/IRR/ISR to include the</li> </ul>		

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		<p>new image sets being made available: Palmprint and Supplemental image sets.</p> <p>Section 3.3.2:</p> <ul style="list-style-type: none"> <li>• Adding new TOT BATQ/BATR for Audit Trail Retrieval of the new image sets.</li> </ul> <p>Section 3.4.2:</p> <ul style="list-style-type: none"> <li>• Added the repository selection, NDR, of criminal and/or civil for Penetration Query (LPNQ).</li> <li>• Expanding LFIS/LFFS/SRL with the new functionality being offered by NGI. Major change is searching each event print to give more accurate results. Including this additional information in the search results.</li> </ul> <p>Section 3.4.3:</p> <ul style="list-style-type: none"> <li>• Included the civil repository in the response.</li> </ul> <p>Section 3.5.1:</p> <ul style="list-style-type: none"> <li>• Expanding the ULM to include when a biometric decision of an IDENT from a contributor that is not the owner of the unsolved latent print along with additional matched image sets being returned.</li> </ul> <p>Section 3.6.3:</p> <ul style="list-style-type: none"> <li>• Adding new BDEL/BDELR TOT for deletion of palmprint and supplemental image sets previously enrolled by owner.</li> <li>• Adding new BDEC/BDECR TOT for biometric decision request which will aid in tuning the NGI matcher accuracy.</li> <li>• Expanding the FIS TOT to support enrollment of palmprint and supplemental image sets.</li> </ul> <p>Appendix C:</p>		

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		<ul style="list-style-type: none"> <li>• Redefined FBI Number to use UCN</li> <li>• Increase maximum occurrences of the NDR field</li> <li>• Added 'inconclusive' to the SRF field.</li> <li>• Added new values to IMT</li> <li>• Added new fields: <ul style="list-style-type: none"> <li>○ ATR – Audit Trail Record</li> <li>○ BIA – Biometric Available</li> <li>○ BID – Biometric Image Descriptor</li> <li>○ BSI – Biometric Set Identifier</li> <li>○ CNL – Candidate Investigative List</li> <li>○ EVI – Event Identifier</li> <li>○ NIR – Number Images Requested</li> <li>○ PPD – Print Position Descriptor</li> <li>○ ULR – Unsolved Latent Retain</li> </ul> </li> </ul> <p>Appendix J:</p> <ul style="list-style-type: none"> <li>• Including complete definition of the 'public' template NGI will be using for the Extended Feature Set.</li> </ul> <p>Appendix M:</p> <ul style="list-style-type: none"> <li>• Removed messages that will not be returned by CJIS.</li> <li>• Updated wording for NGI Increment 3 functionality, changing SLC to SPC</li> <li>• Added new entries for NGI Increment 3 functionality</li> </ul> <p>Appendix N:</p> <ul style="list-style-type: none"> <li>• Added user defined field for describing source of image <ul style="list-style-type: none"> <li>○ ISC</li> </ul> </li> </ul> <p>Appendix P:</p> <ul style="list-style-type: none"> <li>• Adding complete definition of Fingerprint Image Set, Palmprint Image Set, and Supplemental Image Set</li> </ul>		

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		<ul style="list-style-type: none"> <li>• Including examples of transactions, updating figures</li> </ul> <p>Appendix Q (new):</p> <ul style="list-style-type: none"> <li>• Adding Type-15 Definitions</li> </ul> <p>Appendix R (new):</p> <ul style="list-style-type: none"> <li>• Adding Type-13 Definitions</li> </ul> <p>Appendix AC:</p> <ul style="list-style-type: none"> <li>• Adding/removing acronyms as necessary</li> </ul>		
9.2	1/14/2011	<p>General:</p> <ul style="list-style-type: none"> <li>• Removed all references to the document versions and added a separate listing of all the documents referenced in the standard.</li> <li>• Fixing clerical errors.</li> <li>• Adding new services now offered by CJIS/IAFIS.</li> <li>• Expanding definitions for new services to be offered by NGI.</li> </ul> <p>Table of Contents:</p> <ul style="list-style-type: none"> <li>• Corrected figure numbers and page numbers for figures in Appendix P</li> </ul> <p>Section 3:</p> <ul style="list-style-type: none"> <li>• Removed references to Palmprint Search and Supplemental Fingerprint and Palmprint Search as those will be covered under the enhance Friction Ridge Search.</li> <li>• Moved section on Palmprint and Supplemental Fingerprint and Palmprint submission to newly created Appendix P along with expanding on CJIS expectations of how to submit those image sets.</li> <li>• Expanded several sections with more detail of what NGI will be offering as design moves forward.</li> <li>• Adding wording to the following TOTs that they will not be carried over into NGI: CFS, ELR, NAR, LSMQ, &amp;</li> </ul>		

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		<p>LSMR, ULAC.</p> <p>Appendix B:</p> <ul style="list-style-type: none"> <li>• Clarified wording on the DAT 1.005 field as date transaction was submitted.</li> <li>• Added XML encoding namespaces for Type-1 fields.</li> <li>• Corrected sample column entries in Table B-1</li> </ul> <p>Appendix C:</p> <ul style="list-style-type: none"> <li>• Added XML encoding namespaces for Type-2 fields.</li> <li>• Removed the 'Max Byte Count' column from Table C-1.</li> <li>• Corrected sample column entries in Table C-1</li> </ul> <p>Appendix D:</p> <ul style="list-style-type: none"> <li>• Added rows for GEO Locator fields</li> <li>• Added column for the new services: <ul style="list-style-type: none"> <li>○ FVR</li> </ul> </li> </ul> <p>Appendix E:</p> <ul style="list-style-type: none"> <li>• Added rows for GEO Locator fields</li> <li>• Ensure that all tables in appendix have the same fields listed</li> <li>• Added column for the new services: <ul style="list-style-type: none"> <li>○ ERRR</li> </ul> </li> <li>• Removed the following TOTs due to duplication: <ul style="list-style-type: none"> <li>○ ERRI</li> </ul> </li> </ul> <p>Appendix F:</p> <ul style="list-style-type: none"> <li>• Corrected wording for the addition of the new section for Mobile ID.</li> <li>• Added language concerning grandfathering of SAP level 10 and 20 acquisition devices procured for RISC pilot</li> <li>• New devices procured after January 1, 2012 will be subjected to minimum SAP level 30 requirement</li> </ul>		

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		<p>Appendix J:</p> <ul style="list-style-type: none"> <li>• Added XML encoding namespaces for Type-9 fields.</li> </ul> <p>Appendix L:</p> <ul style="list-style-type: none"> <li>• Correct number of records expected for different transactions.</li> <li>• Reorganized Tables L-3 &amp; L-4 to allow for more modalities along with breaking them into more tables for easy of reading.</li> <li>• Added Table L-5 Transaction/Response/Error TOT Correspondence</li> </ul> <p>Appendix P (NEW)</p> <ul style="list-style-type: none"> <li>• Added more detail about how to submit Palmprint Image Sets and Supplemental Fingerprint and Palmprint Image sets.</li> </ul>		
9.1	1/29/2010	<p>General:</p> <ul style="list-style-type: none"> <li>• Changed all references to the ANSI/NIST standard to the ITL-2007 version.</li> <li>• Ensure all wording, definitions, and descriptions are consistent with ANSI/NIST-ITL 2007.</li> <li>• Removed Future Capability TOTs where design has not started for those messages.</li> </ul> <p>Section 3:</p> <ul style="list-style-type: none"> <li>• Changed RISC Notification to Unsolicited Hit Notification and assigned it TOT UHN.</li> <li>• Reworded text for RPIS, RPISR, and UHN TOTs to align with NGI Increment 2 design.</li> <li>• Renamed LFIS &amp; LFFS to Latent Friction Ridge Image Search &amp; Latent Friction Ridge Feature Search.</li> </ul> <p>Appendix C:</p>		

Version/ Revision	Revision Date	Description Of Change	QA Approved	Date
		<ul style="list-style-type: none"> <li>• Added new elements: <ul style="list-style-type: none"> <li>○ SII, 2.2023 – Supplementary Identity Information initially used for RPISR TOT</li> <li>○ HTI, 2.2024 – Hit Type Indicator initially used for UHN TOT</li> </ul> </li> <li>• Updated element descriptions to reflect NGI Increment 2 design: <ul style="list-style-type: none"> <li>○ ACN, 2.071 - Action to be Taken</li> <li>○ CRI, 2.073 - Controlling Agency Identifier</li> <li>○ ERS, 2.075 - Electronic Rap Sheet</li> <li>○ NOT, 2.088 - Note Field</li> <li>○ RAP, 2.070 - Request for Electronic Rap Sheet</li> <li>○ SRF, 2.059 - Search Results Findings</li> </ul> </li> <li>• Included definition for missing element: <ul style="list-style-type: none"> <li>○ SLE, 2.055 – Custody or Supervisory Literal</li> <li>○ ITD, 2.058 – Image Record Type Desired</li> </ul> </li> <li>• Updated definitions: <ul style="list-style-type: none"> <li>○ TSR, 2.043 – Type of Search Requested</li> </ul> </li> <li>• Added DoD's definition of GeoLocator as Future Capability for Mobile ID</li> </ul> <p>Appendix D:</p> <ul style="list-style-type: none"> <li>• Added row for new SII element</li> <li>• Added/Changed elements to existing TOTs: <ul style="list-style-type: none"> <li>○ RPIS</li> <li>○ RPISR</li> <li>○ ITD</li> </ul> </li> <li>• Corrected values for elements of existing TOTs that were represented incorrectly</li> <li>• Deleted column for FVR</li> </ul> <p>Appendix E:</p>		



Version/ Revision	Revision Date	Description Of Change	QA Approved	Date
		<ul style="list-style-type: none"> <li>• Added new column for UHN TOT</li> <li>• Added row for new HTI element</li> <li>• Corrected values for elements of existing TOTs that were represented incorrectly</li> </ul> <p>Appendix I:</p> <ul style="list-style-type: none"> <li>• Corrected values for elements of existing TOTs that were represented incorrectly</li> </ul> <p>Appendix J:</p> <ul style="list-style-type: none"> <li>• Corrected definitions to line up with how IAFIS processes Type-9 records</li> </ul> <p>Appendix L:</p> <ul style="list-style-type: none"> <li>• Added data to tables for NGI Increment 2 design</li> <li>• Adjusted number of record types for TOTs as necessary</li> <li>• Added new fields to Tables L-1, L-2</li> </ul> <p>Appendix O (NEW)</p> <ul style="list-style-type: none"> <li>• Added NCIC POB Code Table</li> </ul> <p>Appendix AC</p> <ul style="list-style-type: none"> <li>• Added acronyms for NGI Increment 2 design</li> <li>• Corrected acronyms that had the incorrect description</li> </ul>		
9.0	9/8/2009	<p>Reorganization of document into the NGI Core User Services:</p> <ul style="list-style-type: none"> <li>• Identification Service</li> <li>• Verification Service</li> <li>• Information Service</li> <li>• Investigation Service</li> <li>• Notification Service</li> <li>• Data Management Service</li> </ul> <p>Removed all TOTs from 'Future Capability' sections until such a time as design has been completed and decision on which TOT will be</p>		

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		<p>used.</p> <p>3.1.6:</p> <ul style="list-style-type: none"> <li>• Added new section for Card Scanning Service (CSS) TOTs.</li> </ul> <p>3.4.5:</p> <ul style="list-style-type: none"> <li>• Added new section for Biographic Investigation Submissions, includes new TOTs: Electronic Subject Search (EQHR, EHRR, EQER, &amp; EQRR).</li> </ul> <p>Appendix A:</p> <ul style="list-style-type: none"> <li>• Reformatted Table A-1</li> <li>• Added new Tables A-2 &amp; A-3</li> </ul> <p>Appendix B:</p> <ul style="list-style-type: none"> <li>• Table B-1 for Type 1 record elements was replaced with previous versions table.</li> </ul> <p>Appendix C:</p> <ul style="list-style-type: none"> <li>• Added new elements: <ul style="list-style-type: none"> <li>○ CIDN, 2.2022 – Contributor Assigned Identification Number for the EQHR TOT</li> </ul> </li> <li>• Updated elements: <ul style="list-style-type: none"> <li>○ NCR, 2.079 – Number of Candidates/Images Returned for EQHR TOT</li> </ul> </li> </ul> <p>Appendix D:</p> <ul style="list-style-type: none"> <li>• Added new columns for EHRR, EQER, EQHR, EQRR, &amp; RPISR</li> <li>• Added/Changed elements to existing TOTs: <ul style="list-style-type: none"> <li>○ ULM: optional 2.060, MSG</li> </ul> </li> </ul> <p>Appendix L:</p> <ul style="list-style-type: none"> <li>• Updated Element Name: <ul style="list-style-type: none"> <li>○ NCR, 2.079 – Number of Candidates/Images Returned for EQHR</li> </ul> </li> <li>• Added New Element:</li> </ul>		

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		<ul style="list-style-type: none"> <li>○ CIDN, 2.2022 – Contributor Assigned Identification Number</li> <li>• Added new Transaction to Recordset Summary Tables: <ul style="list-style-type: none"> <li>○ External Query History Request</li> <li>○ External Query History Response</li> </ul> </li> </ul> <p>Appendix M:</p> <ul style="list-style-type: none"> <li>• Removed Error Codes no longer being used: <ul style="list-style-type: none"> <li>○ L0069, S0006, W0009, &amp; W0010</li> </ul> </li> </ul> <p>Appendix AC:</p> <ul style="list-style-type: none"> <li>• Added new acronyms: <ul style="list-style-type: none"> <li>○ CIDN, EHRR, EQER, EQHR, &amp; EQRR</li> </ul> </li> <li>• Updated acronym name: <ul style="list-style-type: none"> <li>○ NCR</li> </ul> </li> </ul>		

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## PREFACE

### How to Use This Document

This section briefly describes the parts of this document and shows how the user can utilize the document in an efficient manner.

- Section 1: Introduction. This section explains why this document was created, brief descriptions of the specification, and the elements that are commonly used.
- Section 2: Scope. This section explains the scope of this document and its purpose.
- Section 3: Operational Concepts. This section describes the User Services being offered by Next Generation Identification (NGI).
- Appendix A: Transaction Response Times. This appendix briefly presents priorities for each transaction type and response times for the transaction described in this document.
- Appendix B: Descriptors And Field Edit Specifications For Type-1 Logical Records. This appendix describes the field list for Type-1 records (Header Information).
- Appendix C: Descriptors And Field Edit Specifications For Type-2 Logical Records. This appendix contains the definitions of fields used for the Type-2 records (Transaction Descriptive, Demographic, and Biographic Information).
- Appendix D: Summary Logical Record Layouts For Type-2 Identification And Verification Transactions. This appendix contains a summary of Type-2 fields for the Identification and Verification User Services transactions.
- Appendix E: Summary Logical Record Layouts For Type-2 Investigation, Information, and Notification Transactions. This appendix contains the summary of Type-2 fields for the Investigation, Information, and Notification User Services transactions.
- Appendix F: CJIS Image Quality Specifications. This appendix gives the Integrated Automated Fingerprint Identification System (IAFIS) Image Quality Specifications for fingerprint scanners, both for traditional rolled prints and "Identification Flats," printers, and Fast Track Certification procedures.
- Appendix G: Reserved. This appendix is currently Reserved for Future Use.
- Appendix H: Descriptors And Field Edit Specifications For Type-7 Logical Records. This appendix presents the Type-7 (Tenprint Fingerprint Card Images) logical record field list, including descriptors and edit specifications.
- Appendix I: Summary Logical Record Layouts For Type-2 Data Management Transactions. This appendix presents a summary of Type-2 record layouts for Data Management User Services transactions.
- Appendix J: Descriptors And Field Edit Specifications For Type-9 Logical Records. This appendix gives the Type-9 (Fingerprint Minutiae Information) logical record field list, including descriptors and edit specifications.
- Appendix K: Descriptors And Field Edit Specifications For Type-10 Logical Records. This appendix details the Type-10 (Photo Images) logical record field list and the Type-2 (Photo) transaction field lists. Appendix K also gives considerable detail concerning photos and Type-2 descriptor information for Scars, Marks, and Tattoos.

- Appendix L: Summary Tables. This appendix provides a complete cross-reference of elements and their tag numbers and lists logical record requirements for each transaction type.
- Appendix M: Transaction Error Messages. This appendix contains error message details.
- Appendix N: Field Edit Specifications For Type-14 Logical Records. This appendix provides definition descriptors and field edits of Type-14 Variable Resolution Fingerprint Image Record.
- Appendix O: NCIC POB Code Table. This appendix contains codes applicable to place of birth and citizenship, and displays allowable codes for each.
- Appendix P: Specifications For Transmitting Palmprints And Supplemental Fingerprints. This appendix contains the recommendations for submission of palmprints along with supplemental fingerprint and palmprint images.
- Appendix Q: Descriptors And Field Edit Specifications For Type-15 Logical Records. This appendix contains the detail of the Type-15, Palmprint, record type elements.
- Appendix R: Descriptors And Field Edit Specifications For Type-13 Logical Records. This appendix contains the detail of the Type-13, Friction Ridge, record type elements.
- Appendix AC: Acronyms.

For example, to obtain information for sending a Criminal Tenprint Submission, (Answer Required) (CAR), refer to Section 3 for CAR definition, Appendix B for Type-1 logical record field list, Appendix D for the Type-2 CAR transaction field list, and Appendix C for field definitions.

## INTRODUCTION

### 1.1 Background

For nearly 100 years, fingerprint cards have been accepted as the standard means for recording and storing fingerprint identification data. Over that period, the content, format, and quality of fingerprint cards have been revised and refined. Fingerprint cards have evolved into an accepted international standard for the exchange of fingerprint, identification, and arrest data between criminal and noncriminal justice agencies.

Historically fingerprint cards were physically transported and processed; therefore, substantial delays occurred in the identification cycle. The Integrated Automated Fingerprint Identification System (IAFIS) was developed to support the paperless submission of fingerprint information. This improved the speed and accuracy of the fingerprint identification process and has nearly eliminated the need for contributing agencies to create and transport paper fingerprint cards to the FBI. As Next Generation Identification (NGI) begins to replace parts of IAFIS, contributors will see improved speed and accuracy of the fingerprint identification process along with the addition of other biometric capabilities.

In support of the development of the CJIS/NGI and in accordance with the recommendations of the CJIS Advisory Policy Board (APB) Identification Services Subcommittee, the FBI has developed a standard for electronically encoding and transmitting fingerprint images, identification, and arrest data that extends the ANSI/NIST-ITL standard. ANSI/NIST-ITL was established in conjunction with the National Institute of Standards and Technology (NIST) and the fingerprint identification community.

The original intent of the ANSI/NIST-ITL standard was to define the content, format, and units of measurement for the exchange of information that may be used in the fingerprint identification of a subject. The ANSI/NIST-ITL standard was intended for use in the interchange between criminal justice administrations or organizations that use an Automated Fingerprint Identification System (AFIS) and to provide a common interface for other AFIS and related systems worldwide. The most recent update of the ANSI/NIST-ITL standard includes new record types to facilitate data sharing for additional biometric modalities, and has added information regarding additional biometric modes, such as palm, facial, and iris recognition.

While the aforementioned ANSI/NIST-ITL standard provides the guidelines for the exchange of biometric information between various federal, state, local, tribal, and international systems, the FBI's EBTS defines requirements to which agencies must adhere when electronically communicating with the CJIS Division. The FBI's EBTS and its future revisions will inherit the basic requirements for logical records set forth in the ANSI/NIST-ITL standard. However, the FBI-specific requirements for the ANSI/NIST-ITL implementation of logical records Type-1 (Header Information), Type-2 (Transaction Descriptive, Demographic and Biographic

Information), Type-4 (Fingerprint Image Descriptive Information), Type-7 (Tenprint Fingerprint Card Images), Type-9 (Fingerprint Minutiae Information), Type-10 (Photo Images), Type-13 (Latent Friction Ridge Images), Type-14 (Variable Resolution Fingerprint Images), Type-15 (Palmprint Images), Type-17 (Iris Images), and other record types are contained in this EBTS.

The CJIS Division will be using NGI to move toward a system that will contain biometric and biographic profiles of the subject records in its databases. NGI will evolve over time as there will be incremental deliveries into the CJIS IAFIS system. This will allow the FBI to move toward a capability that will facilitate multimodal biometric searching of its databases. Though fingerprints will continue to be the FBI's primary mode of identification for the near future, the FBI EBTS document describes the technical specifications for the submission of the additional biometric modalities to provide this future multimodal biometric search capability. As NGI evolves, CJIS will be introducing enhancements to Web Services and the EBTS XML schema. The XML schema element names and mapping to legacy elements will be provided in this standard and further expanded in the appendices.

## 1.2 File Format

EBTS defines the composition of the records comprising a transaction that is transmitted to another site or agency. Certain portions of the transaction shall be in accordance with definitions provided by the receiving agency. All records in a transaction shall pertain to a single subject. Biometric data used to identify another individual requires a separate transaction. A transaction<sup>1</sup> is comprised of records. All of the records belonging to a single transaction shall be transmitted together. There may be multiple records in a transaction of each record type other than Type-1. The only required records are Type-1 and Type-2, which are used to describe the transaction and the subject. There shall be at least one data record accompanying a Record Type-1. The maximum number of records in a transaction is restricted to 1000.

In order to ensure that the transaction description information can be read by all systems, data for all fields, Record Type-1 shall always be recorded in all encodings using the 7-bit American National Standard Code for Information Interchange (ASCII). The eighth (leftmost) bit shall contain a zero value. (This is consistent with the specification of UTF-8 for XML encodings, since ASCII is a subset of UTF-8).

The default character encoding for Traditional encoding is 7-bit ASCII. Users are encouraged to choose the option of UTF-8 for 'U' and 'user-defined' character types that does not require the use special control characters in Traditional Encoding.

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<sup>1</sup> An ANSI/NIST-ITL transaction is called a file in Traditional Encoding and an Exchange Package in XML encoding.

For XML, UTF-8 shall be used. It is not possible to switch encodings within a transaction using XML.

The first field in the native tagged-field records shall be labeled as field "1" and contain the length in bytes of the record. This field is not necessary in the XML schema. The second field shall be labeled as field "2" in the Type-1 record and contains the version number while in the other records this field contains the Information Designation Character. The remaining natively-encoded textual fields may occur in any order and contain the information as described for that particular numbered field. However, the remaining fields in the XML schema do come in a specific order as laid out in the appendices. For tagged-field image records Type-10 through Type-99, the last and concluding field shall have a tagged ASCII field number identifier "999" followed by the image data.

In the construction and interpretation of the logical record, there is no requirement that the tagged fields be present within the logical record in any given order, with the exception of the Length (LEN) and Information Designation Character (IDC), which must be in the first and second position in the record, respectively. Thus, for example, a State Identification Bureau (SIB) could add the State Identification Number (SID) to the end of a Type-2 record created at the booking station. However, for those record types conveying image data (e.g., 13.999: DAT), the data field will always be the last field in the string. For XML encoding, the order will be defined and laid out in the appendices of this standard.

For the binary image Type-4 logical records, the content and order of the recorded fields are specified by this standard. With the exception of the first two fields, the remaining fields of the Type-7 logical image record are all user-defined (see Appendix H for CJIS EBTS definitions of those fields). All fields and data in these record types shall be recorded as binary information. For XML encoding, all the fields are laid out as ASCII with the image data being base-64 encoded.

### **1.3 Change Control**

The EBTS defines the interface between IAFIS and the state, tribal, international, and other federal organizations' (OFO) systems. Any changes to the data fields or formats within the EBTS must honor previously published protocols to ensure that the systems are not adversely affected. Since CJIS and the states' and OFO's systems were developed independently, a process has been established that provides for coordinated enhancements within the various systems while maintaining reliable interoperability. This process is based on the tagged field structure defined in the ANSI/NIST-ITL standard and a few "business rules." The rules simply state that field definitions cannot change over time or from system to system. Each system, CJIS, state and OFO, is assigned a range of field tag numbers that they are allowed to define for passing information in their system. If a change inside that system is needed, the system would create and define the new field within the bounds of their assigned range. The new field cannot be made

mandatory for established functionality, but merely enhances functionality for those systems wishing to incorporate the new definition. With this process in place, every system on the network has the opportunity to enhance its own system on its own schedule, yet no system is ever forced to make a change in order to maintain current functionality.

## 1.4 Tagged Fields

### 1.4.1 Interpretation of Tags

In the construction and interpretation of the native logical record, the tag number should not be taken as having a fixed number of digits. The format for each field consists of the logical record type number followed by a period ".", a field number followed by a colon ":", followed by the information appropriate to that field. The tagged-field number can be any one to nine-digit number occurring between the period "." and the colon ":". It shall be interpreted as an unsigned integer field number. This implies that a field number of "2.123" is equivalent to and shall be interpreted in the same manner as a field number of "2.000000123".<sup>2</sup>

For example, in this version of the standard, native Type-2 logical record field tags were always shown as having three digits between the decimal point and colon (2.NNN:data...). However, now the Type-2 field tag numbers have been expanded to four or more digits (2.NNNN:data...). To accommodate such possibilities, the field numbers should be parsed as all digits between the period and colon.

### 1.4.2 Use of Separator Characters

Separator characters are used in the native encoding but are not necessary in the XML encoding. Separator characters may best be understood by considering them necessary for what follows them, not what precedes them. Thus, when a tagged field includes subfields<sup>3</sup> (e.g., the ASL field contains subfields DOO and AOL), and another subfield is still to follow, the following one must be separated from the one preceding it by the unit separator character. If what is to follow is a repetition of a field or group of subfields, a record separator must separate the preceding field or group of subfields from the repetition to follow. If what is to follow is a new field, then the group separator character is used. If the record is complete after the previous field, the file separator is used.

As stated in the ANSI/NIST-ITL, successive separator characters now may be used with no intervening blank or other character when a subfield is missing. In Type-2 records, CJIS recognizes the following sequences as meaning that a subfield is missing: <US><US>,

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<sup>2</sup> ANSI/NIST-ITL 2007

<sup>3</sup> The EBTS' use of the term *subfield* is synonymous with the term *information item* found in the ANSI standard.

<US><RS>, <US><GS>, and <US><FS>. These are needed to obviate the need for CJIS to validate each subfield in a grouped field to see whether it contains valid data or is merely a blank. This will keep invalid data out of CJIS databases.

### **1.5 Error Handling**

Error processing takes on two primary forms within CJIS: front-end error detection and internal process error detection and correction. The front-end process examines every incoming transaction from a security and mandatory data perspective. Potential security violations are rejected and transferred immediately to a system administrator. Some transactions lacking mandatory data, or that are incomplete in referenced content, are rejected back to the contributor. All mandatory data and all optional data fields are content -validated for length and type of data included. Optional data failing this validation check are ignored. The remaining mandatory data that fail this validation check are passed to a Quality Check (QC) Service Provider for resolution. If the service provider can correct the data, the transaction will be forwarded for further processing. If the service provider cannot resolve the issue, the transaction can either be rejected or sent forward for attempted resolution later in the process.

Internal process error detections and corrections are performed any time IAFIS attempts to utilize incoming data to perform a search or update a database. Any such action will check the field according to length and type as well as content. Some data values are content-sensitive. That is, they can only be examined with respect to the databases against which they are to be applied. Errors in submissions detected at that time will generally be forwarded to a logic error resolution service provider. At that point, appropriate actions can be taken to correct the discrepancy, and an internal resubmission of the transaction can take place. Alternatively, if the service provider cannot resolve the issue, the transaction can be rejected.

In the interpretation of the logical record, tags that are not defined for the requested transaction are to be ignored; their inclusion is not to be considered an error. This rule makes it possible to use a single transmission format, for example, to control both intrastate and interstate transmissions. These fields will be ignored and will not be saved, nor will they be returned to the contributor on responses sent from CJIS. For XML encoding, the fields that are included in the State Defined Fields element (SDF) will be ignored by CJIS.

Fields should not be transmitted when there is no value present (e.g., 2.033:<GS>). However, receipt of such an empty field, if the field is not mandatory, should not result in rejection of the record or issuance of an error message. Rejection will occur when missing or incorrect data is received that would prevent processing of the transaction. The following list illustrates these types of errors.

