



U.S. Department of Justice
Federal Bureau of Investigation

ELECTRONIC BIOMETRICS TRANSMISSION SPECIFICATION (EBTS)

Information Exchange Package Documentation

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DRAFT

Table of Contents

<u>TABLE OF CONTENTS</u>	3
<u>1. SCOPE AND PURPOSE</u>	5
1.1. Scope	5
1.2. Purpose	5
<u>2. LIST OF ARTIFACTS</u>	5
<u>3. XML SCHEMAS</u>	6
3.1. Subset Schemas	6
3.2. Extension Schema	6
<u>4. ADDITIONAL PROVISIONS</u>	6
4.1. Additional Property Definitions	7
4.1.1. The EBTS Transactions	7
4.1.2. The EBTS Records	8
4.1.3. EBTS Field Mnemonics/NIEM Definitions	9
4.2. Minimal Properties Set	22
4.3. Additional Business Rules	22
4.3.1. Message Field Mnemonic Sets	23
4.3.2. Fingerprint Images	23
4.3.3. User Defined Images	23
4.3.4. Minutiae Data	23
4.3.5. Facial Images	24
4.3.6. Latent Print Images	24
4.3.7. Major Case Print	24
4.3.8. Palmprint Images	24
4.3.9. Iris Images	24
4.3.10. CBEFF Biometric Data	24
4.4. Messages Layout	24
4.4.1. Inbound Messages	24
4.4.2. Response Messages	25
<u>5. SAMPLES</u>	26
<u>5.1. SAMPLES XML INSTANCES</u>	26

<u>6. DEVELOPMENT</u>	28
6.1. Participants	28
6.2. Process:	28
6.3. Development Artifacts:	29
6.3.1. Schema Model Diagram	30
6.3.1.1. Transaction Model Diagram	31
6.3.1.2. Detailed Transaction Model Diagram	32
6.3.2. XML Mapping Documents	32
<u>7. TESTING AND CONFORMANCE</u>	33
7.1. Testing	33
7.2. Conformance	33
<u>8. FEEDBACK</u>	33

1. Scope and Purpose

1.1. Scope

Data in the Federal Bureau of Investigation (FBI) Electronic Biometric Transmission Specification (EBTS) files are exchanged with and for the official use of criminal justice officials of local, state, and federal governments in the U.S. and its possessions and in Canada.

1.2. Purpose

The Federal Bureau of Investigation Electronic Biometrics Transmission Specification is the method by which the Federal Bureau of Investigation supports the exchange of biometric data used to facilitate the determination of the personal identity of a subject from fingerprint, palm, facial or other biometric information, across criminal justice agencies or organizations that use an Automated Fingerprint Identification System (AFIS) or related systems nationwide.

These biometric specifications are standards for electronically encoding and transmitting biometric image, identification and arrest data. The FBI EBTS is comprised of the biometric standards entitled "Data Format for the Interchange of Fingerprint, Facial, & Other Biometric Information" (ANSI/NIST-ITL 1-2007), which are composed by the American National Standards Institute (ANSI) in correspondence with The Information Technology Laboratory (ITL) of the National Institute of Standards and Technology (NIST). These standards define the content, format and units of measurement for the exchange of biometric information.

The FBI EBTS serves criminal justice agencies in the 50 states, the District of Columbia, Puerto Rico, and Canada. It also serves authorized federal agencies requesting biometric identification information.

This Interface Exchange Package Documentation covers the FBI EBTS XML Data Reference Model.

2. List of Artifacts

1. NIEM Subset schemas
2. JXDM Subset schema
3. ANSI-NIST Subset schema
4. FBI Subset schema
5. Extension schema
6. XML Document Instance
7. Data Model Diagram
8. XML Mappings

9. EBTS IEP Documentation

3. XML Schemas

NIEM Version: 2.0

JXDM Version: 4.0

ANSI-NIST Version: 2.0

FBI Version 2.0

The FBI Advisory Policy Board made the decision for the FBI to implement EBTS schema using NIEM; NIEM 2.0 is the current release version of NIEM used to implement the FBI EBTS Information Exchange Package for purposes of information sharing.

NIEM is designed to work in conjunction with schemas geared toward specific areas (e.g., Criminal Justice, Biometrics, and Law Enforcement) necessary to capture the business requirements for an EBTS transaction. These schemas are released as part of NIEM 2.0.

3.1. Subset Schemas

- A NIEM subset schema is created to capture basic elements and types are components of EBTS IEP. This subset schema is under the FBI EBTS Schema Package\ niem\ niem-core\ 2.0\ niem.xsd.
- An ANSI-NIST subset schema is created to capture biometric elements and types that are components of EBTS IEP. This subset schema is under the FBI EBTS Schema Package\ niem\ ansi-nist\ 2.0\ ansi-nist.xsd.
- A JXDM subset schema was created to capture criminal justice elements and types that will be components of EBTS IEP. This subset schema is under the FBI EBTS Schema Package\ niem\ domains\ jxdm\ 4.0\ jxdm.xsd.
- A FBI subset schema is created to capture code lists used by the FBI as components of EBTS IEP. This subset schema is under the FBI EBTS Schema Package\ niem\ fbi\ 2.0\ fbi.xsd.

In the scope of this document, elements used from these schemas are referred to as NIEM elements and they are represented using their corresponding namespace.

3.2. Extension Schema

The extension schema contains customized types, elements, extensions and restrictions of the subset schema that are frequently needed for the IEP but that are not in NIEM, ANSI-NIST, JXDM or FBI. This extension XML schema is under EBTS Schema Package\ 1.0.0\ fbi_ebts.xsd.

4. Additional Provisions

4.1. Additional Property Definitions

The basic requirements for EBTS messages are Logical Records Type-1, Type-2, Type-4, Type-7, Type-9, Type-10, Type 13, Type-14, Type 15, Type 17 and Type 99 set forth in the ANSI standards which are also applicable to transmissions to the FBI. The FBI-specific requirements for the contents and format of Logical Records Type-2, Type-7, and Type-9 as well as for any special requirements for the other record types, are captured in the business requirements for an EBTS transaction.

4.1.1. The EBTS Transactions

FBI CJIS Division will process the following seven types of fingerprint and four photo transactions from the four main service areas in its electronic environment. There are several types of transactions for each service area that will be accepted by the FBI, the sender must designate the Type of Transaction (TOT) in the Type-1 Record to specify the which process is to be followed.

Ten-Print Services

- Electronic Ten-Print Submissions enable users to submit ten-prints from live-scan booking terminals or card scanners at either the federal, state or local level.
- Remote Ten-Print Searches allow users to search existing records by electronically transmitting fingerprint images or remotely extracted fingerprint characteristics. The user can request specific finger images, up to all 14 fingerprint images, via the Fingerprint Number(s) Requested (FNR) field.

Latent Services

- Electronic Latent Submissions enable the agency having legal jurisdiction of the case, either federal, state or local, to submit latent prints (fingerprints, palm prints, toe prints, and footprints).
- Remote Latent Searches allow the agency having legal jurisdiction of the case, either federal, state or local, to search existing records by transmitting latent print images or corresponding feature sets. The user can set the maximum number of candidate images to be returned via the Number of Candidate's Images returned (NCR) field.
- Latent Image Maintenance Requests allow IAFIS users to specify transactions (delete or add confirm) related to an unsolved latent file.

Image Services

- Remote Requests for Fingerprint Images enable users to retrieve ten-print images from the FBI Criminal Ten-print Fingerprint Image Master File.
- Electronic Requests to Upgrade Fingerprint Images allow users to request fingerprint images on file at the FBI or to request updates of existing images.

Photo Services

- Criminal Subject Photo Requests allow users to request criminal photo sets on file at the FBI or to request the deletion of existing photo sets.

4.1.2. The EBTS Records

Type-1 Header Record

- Record required for each transaction, providing information describing the type and use or purpose for the transaction involved, a listing of each logical record included, the original source of the physical record and other useful and required information items.

Type-2 Record

- Records containing textual fields providing identification and descriptive information associated with the subject of the transaction.

Type-4 Record

- Records used to exchange high-resolution grayscale fingerprint image data that was scanned at no less than the minimum scanning resolution.

Type-7 Record

- Records used exchange image data that is not elsewhere specified or described in the ANSI-NIST standard, including miscellaneous images such as those pertaining to latent prints, wrists, toes, soles, etc.

Type-9 Record

- Records used to exchange geometric and topological minutiae templates and related information encoded from a fingerprint, palm, or latent image. Each record shall represent the processed image data from which the location and orientation descriptors of extracted minutiae characteristics are listed.

Type-10 Record

- Records used to exchange facial and image data from scars, marks, and tattoos (SMT) together with textual information pertinent to the digitized image. The source of the image data shall be the image captured from scanning a photograph, a live image captured with a digital camera, or a digitized “freeze-frame” from a video camera.

Type-13 Record

- Records containing and used to exchange image data acquired from latent fingerprint or palmprint images. Textual information regarding the scanning resolution, the image size and other parameters or comments required to process the image are recorded as tagged-fields within the record.

Type-14 Record

- Records used to exchange variable-resolution fingerprint image data, segmented flat fingerprint data or major case print data. All fingerprint impressions shall be acquired from a ten-print card, a major case print card, or from a live-scan device. Fingerprint images can be either rolled or plain (including swiped) impressions.

Type-15 Record

- Records used to exchange variable-resolution palmprint image data.

Type-17 Record

- Records used to exchange iris image data.

Type-99 Record

- Records used to exchange biometric data that is not supported by other logical record types. This record type supports and is intended to be used for “exotic” biometric data types.

4.1.3. EBTS Field Mnemonics/NIEM Definitions

The following table represents the association of EBTS Message Field Codes Mnemonics, Field Numbers, and the NIEM XML Data Model elements. This table is provided to help implementers cross-reference the XML property definition. It is assumed that the data elements definitions and specifications are available in the FBI EBTS.

Throughout this document, inbound refer to messages coming into the FBI Biometric System and outbound refers to messages generated by the FBI Biometric System.

EBTS Field Mnemonic	Field Number	NIEM Element
ACN	2.071	<ebts:TransactionActionText/>
AFV	9.013	<nc:BinaryBase64Object/>
AGR	2.023	<nc:PersonAgeMeasure> <nc:MeasureRangeValue> <nc:RangeMinimumValue/> <nc:RangeMaximumValue/> </nc:MeasureRangeValue> </nc:PersonAgeMeasure>
AKA	2.019	<nc:PersonAlternateName> <nc:PersonGivenName/> <nc:PersonMiddleName/> <nc:PersonSurName/> </nc:PersonAlternateName>
AMP	2.084	<itl:FingerprintImageFingerMissing> <ansi-nist:FingerPositionCode/> <itl:FingerMissingCode/> </itl:FingerprintImageFingerMissing>
AOL	2.047B	<nc:ActivityDescriptionText/>
ASL		<j:Arrest> <nc:ActivityDate> <nc:Date/> </nc:ActivityDate> <nc:ActivityDescriptionText/> </j:Arrest>
ATN	2.006	<nc:CaveatText/>
BPX	14.012	<ansi-nist:ImageBitsPerPixelQuantity/>

EBTS Field Mnemonic	Field Number	NIEM Element
CAN	2.064	<ebts:Candidate> <nc:PersonName> <nc:PersonGivenName/> <nc:PersonMiddleName/> <nc:PersonSurName/> </nc:PersonName> <j:PersonFBIIdentification> <nc:IdentificationID/> </j:PersonFBIIdentification> </ebts:Candidate>
CDD	2.051A	<j:ArrestCharge> <j:ChargeDisposition> <j:ChargeDispositionCondition> <nc:ConditionSetDate> <nc:Date/> </nc:ConditionSetDate> </j:ChargeDispositionCondition> </j:ChargeDisposition> </j:ArrestCharge>
CFS	2.077	<ebts:RecordTransactionData> <ebts:TransactionCancelFingerprintSearchIndicator/> </ebts:RecordTransactionData>
CGA	10.011, 14.011	<ansi-nist:ImageCompressionAlgorithmText/>
CHQ	9.024	<ebts:MinutiaCharaterizationQualityValue/>
CIN	2.010	<ebts:ContributorCaseIdentificationNumber> <ebts:ContributorCasePrefixIdentification> <nc:IdentificationID/> </ebts:ContributorCasePrefixIdentification> <ebts:ContributorCaseIdentification> <nc:IdentificationID/> </ebts:ContributorCaseIdentification> </ebts:ContributorCaseIdentificationNumber>
CIX	2.011	<ebts:ContributorCaseIdentificationExtensionNumber/>
CLQ	9.025	<ebts:MinutiaClassifierQualityValue/>
CNT	1.03	<ansi-nist:TransactionContentSummary> <ansi-nist:ContentFirstRecordCategoryCode/> <ansi-nist:ContentRecordCount/> <ansi-nist:ContentRecordSummary> <ansi-nist:ImageReferenceIdentification> <nc:IdentificationID/> </ansi-nist:ImageReferenceIdentification> <ansi-nist:RecordCategoryCode/> </ansi-nist:ContentRecordSummary> </ansi-nist:TransactionContentSummary>

EBTS Field Mnemonic	Field Number	NIEM Element
COL	2.051B	<j:ArrestCharge> <j:ChargeUCRCrimeCategoryText/> </j:ArrestCharge>
COL	10.043	<ansi-nist:PhysicalFeatureDescriptionDetail> <ansi-nist:PhysicalFeatureColorDetail> <ansi-nist:PhysicalFeaturePrimaryColorCode/> <ansi-nist:PhysicalFeatureSecondaryColorCode/> </ansi-nist:PhysicalFeatureColorDetail> </ansi-nist:PhysicalFeatureDescriptionDetail>
CPL	2.051C	<j:ArrestCharge> <j:ChargeDisposition> <j:ChargeDispositionOtherText/> </j:ChargeDisposition> </j:ArrestCharge>
CRI	2.073	<ebts:ActivityOrganizationAssociation> <nc:Organization> <nc:OrganizationOtherIdentification> <nc:IdentificationID/> </nc:OrganizationOtherIdentification> </nc:Organization> </ebts:ActivityOrganizationAssociation>
CSP	10.012	<ansi-nist:ImageColorSpaceCode/>
CRN	2.085	<ebts:CivilRecordIdentification> <nc:IdentificationID/> </ebts:CivilRecordIdentification>
CSL	2.051	<j:ArrestCharge> <j:ChargeDisposition> <j:ChargeDispositionCondition> <nc:ConditionSetDate> <nc:Date/> </nc:ConditionSetDate> </j:ChargeDispositionCondition> <j:ChargeDispositionOtherText/> </j:ChargeDisposition> <j:ChargeUCRCrimeCategoryText /> </j:ArrestCharge>
CSR	2.048	<ebts:RecordTransactionData> <ebts:TransactionCivilSearchRequestIndicator/> </ebts:RecordTransactionData>
CST	2.061	<ebts:CaseTitleText/>
CTZ	2.021	<nc:PersonCitizenshipText/>
DAT	10.999 14.999	<nc:BinaryBase64Object/>

EBTS Field Mnemonic	Field Number	NIEM Element
DAT	1.005	<ansi-nist:TransactionDate> <nc:Date/> </ansi-nist:TransactionDate>
DAI	1.007	<nc:OrganizationOtherIdentification> <nc:IdentificationID/> </nc:OrganizationOtherIdentification>
DCS	1.015	<ansi-nist:TransactionCharacterSetDirectory> <ansi-nist:CharacterSetCommonNameCode/> <ansi-nist:CharacterSetIndexCode/> <ansi-nist:CharacterSetVersionIdentification> <nc:IdentificationID/> </ansi-nist:CharacterSetVersionIdentification> </ansi-nist:TransactionCharacterSetDirectory>
DID	9.021B	<ansi-nist:PositionDirectionDegreeValue/>
DID	9.022C	<ansi-nist:PositionHorizontalCoordinateValue/>
DID	9.022D	<ansi-nist:PositionTopCoordinateValue/>
DID	9.022B	<ansi-nist:PositionVerticalCoordinateValue/>
DMM	10.030	<ansi-nist:ImageCaptureDetail> <ansi-nist:CaptureDescriptionCode/> </ansi-nist:ImageCaptureDetail>
DOA	2.045	<nc:ActivityDate> <nc:Date/> </nc:ActivityDate>
DOB	2.022	<nc:PersonBirthDate> <nc:Date/> </nc:PersonBirthDate>
DOM	1.013	<ansi-nist:TransactionDomain> <ansi-nist:DomainVersionNumberIdentification> <nc:IdentificationID/> </ansi-nist:DomainVersionNumberIdentification> <ansi-nist:OrganizationName/> </ansi-nist:TransactionDomain>
DOO	2.047A	<nc:ActivityDate> <nc:Date/> </nc:ActivityDate>
DOS	2.046	<ebts:ArrestDateSuffixText/>
DPR	2.038	<ebts:PersonFingerprintSet> <nc:BiometricCaptureDate> <nc:Date/> </nc:BiometricCaptureDate> </ebts:PersonFingerprintSet>

EBTS Field Mnemonic	Field Number	NIEM Element
EAD	2.039	<ebts:PersonEmploymentAssociation> <nc:Employer> <nc:EntityOrganization> <nc:OrganizationName/> </nc:EntityOrganization> </nc:Employer> <nc:EmploymentLocation> <nc:LocationAddress> <nc:StructuredAddress> <nc:LocationStreet> <nc:StreetNumberText/> <nc:StreetName/> </nc:LocationStreet> </nc:StructuredAddress> </nc:LocationAddress> </nc:EmploymentLocation> </ebts:PersonEmploymentAssociation>
ETC	2.069	<ebts:TransactionEstimatedCompletionTimeQuantity/>
EXP	2.080	<ebts:TransactionResponseData> <ebts:TransactionReasonText/> </ebts:TransactionResponseData>
EYE	2.031	<nc:PersonEyeColorCode/>
FBI	2.014	<j:PersonFBIIdentification> <nc:IdentificationID/> </j:PersonFBIIdentification>
FFN	2.003	<ebts: FBIFileNumber/>
FGN	9.014	<ebts:PersonFingerprintSet> <ebts:FingerprintFingerText/> </ebts:PersonFingerprintSet>
FGP		
FGP	2.074, 2.034A, 2.084A, 2.091A, 2.092A	<ebts:FingerprintImageFinger> <ansi-nist:FingerPositionCode/> </ebts:FingerprintImageFinger>
FGP	9.006,	<ansi-nist:MinutiaeFingerPositionCode/>
FGP	14.013	<ansi-nist:FingerprintImagePosition> <ansi-nist:FingerPositionCode/> </ansi-nist:FingerprintImagePosition>
FIU	2.072	<ebts:TransactionFingerprintImagesUpdated> <ansi-nist:FingerPositionCode/> <ansi-nist:FingerPositionCode/> </ebts:TransactionFingerprintImagesUpdated>
FMT	9.004	<ansi-nist:MinutiaeFormatNISTStandardIndicator/>
FNR	2.084A	<ebts:TransactionFingerprintImagesRequestedText/>

EBTS Field Mnemonic	Field Number	NIEM Element
FNU	2.064A	<j:PersonFBIIdentification> <nc:IdentificationID/> </j:PersonFBIIdentification>
FPC	2.033	<ebts:FingerprintImageFinger> <ebts:NCICFingerprintClassificationText/> </ebts:FingerprintImageFinger>
FPC	9.007	<ansi-nist:MinutiaeFingerPatternDetail> <ansi-nist:FingerPatternText/> <ansi-nist:FingerPatternCode/> </ansi-nist:MinutiaeFingerPatternDetail>
GCA	7.08	<ansi-nist:ImageCompressionAlgorithmCode/>
GEO	2.044	<ebts:TransactionSearchAreaCode/>
GMT	1.014	<ansi-nist:TransactionUTCDate> <nc:Date/> </ansi-nist:TransactionUTCDate>
HAI	2.032	<nc:PersonHairColorCode/>
HGT	2.027	<nc:PersonHeightMeasure> <nc:MeasurePointValue/> </nc:PersonHeightMeasure>
HLL	7.06, 10.006, 14.006	<ansi-nist:ImageHorizontalLineLengthPixelQuantity/>
HPS	10.009, 14.009	<ansi-nist:ImageHorizontalPixelDensityValue/>
HTR	2.028	<nc:PersonHeightMeasure> <nc:MeasureRangeValue> <nc:RangeMinimumValue/> <nc:RangeMaximumValue/> </nc:MeasureRangeValue> </nc:PersonHeightMeasure>
ICO	2.056	<nc:ActivityDescriptionText/>
IDC	2.002, 7.02, 9.002, 10.002	<ansi-nist:ImageReferenceIdentification> <nc:IdentificationID/> </ansi-nist:ImageReferenceIdentification>
IMG	7.99	<nc:BinaryBase64Object/>
IMP	7.03, 9.003	<ansi-nist:FingerprintImageImpressionCaptureCategoryCode/>
IMT	2.062, 10.003	<ansi-nist:ImageCategoryCode/>
IQM	14.022	<ansi-nist:FingerprintImageSegmentationQuality> <ansi-nist:FingerPositionCode/> <ansi-nist:QualityValue/> </ansi-nist:FingerprintImageSegmentationQuality>
IRT		<ansi-nist:RecordCategoryCode/>

EBTS Field Mnemonic	Field Number	NIEM Element
ISR	7.05	<ansi-nist:ImageCaptureDetail> <ansi-nist:CaptureResolutionCode/> </ansi-nist:ImageCaptureDetail>
LCN	2.012	<ebts:FBILatentCaseIdentification> <nc:IdentificationID/> </ebts:FBILatentCaseIdentification>
LCX	2.013	<ebts:FBILatentCaseExtensionNumber/>
LEN	1.01, 2.001, 7.01, 9.001, 10.001, 14.001	<nc:BinarySizeValue/>
MAK	2.067A	<ansi-nist:ImageCaptureDetail> <ansi-nist:CaptureDeviceMakeText/> </ansi-nist:ImageCaptureDetail>
MDX	9.012A, 9.023A	<ansi-nist:MinutiaDetail> <ansi-nist:MinutiaIdentification> <nc:IdentificationID/> </ansi-nist:MinutiaIdentification> </ansi-nist:MinutiaDetail>
MET	9.016C	<ansi-nist:MinutiaeReadingSystem> <ansi-nist:ReadingSystemCodingMethodCode/> </ansi-nist:MinutiaeReadingSystem>
MIL	2.042	<ebts:RecordTransactionData> <ansi-nist:TransactionSubmissionMilitaryCode/> </ebts:RecordTransactionData>
MNT	9.023D	<ansi-nist:MinutiaCategoryCode/>
MNU	2.017	<nc:PersonOtherIdentification> <nc:IdentificationID/> </nc:PersonOtherIdentification>
MODL	2.067B	<ansi-nist:ImageCaptureDetail> <ansi-nist:CaptureDeviceModelText/> </ansi-nist:ImageCaptureDetail>
MCOUNT	9.012E	<ansi-nist:MinutiaRidgeCount> <ansi-nist:RidgeCountReferenceIdentification> <nc:IdentificationID/> </ansi-nist:RidgeCountReferenceIdentification> <ansi-nist:RidgeCountValue/> </ansi-nist:MinutiaRidgeCount>

EBTS Field Mnemonic	Field Number	NIEM Element
MRO	9.023E – 9.023 K	<ansi-nist:MinutiaRidgeCount> <ansi-nist:RidgeCountReferenceIdentification> <nc:IdentificationID/> </ansi-nist:RidgeCountReferenceIdentification> <ansi-nist:RidgeCountValue/> </ansi-nist:MinutiaRidgeCount>
MSC	2.089	<ebts:TransactionCandidateList> <ebts:CandidateListMatchScore/> </ebts:TransactionCandidateList>
MSG	2.060	<ebts:TransactionResponseData> <ebts:TransactionStatusText/> </ebts:TransactionResponseData>
MQUAL	9.012C	<ansi-nist:MinutiaQualityValue/>
MXYTHETA	9.012B	<ansi-nist:MinutiaDetail> <ansi-nist:MinutiaPosition> <ansi-nist:PositionHorizontalCoordinateValue/> <ansi-nist:PositionThetaAngleMeasure/> <ansi-nist:PositionVerticalCoordinateValue/> </ansi-nist:MinutiaPosition> </ansi-nist:MinutiaDetail>
NAM	2.018, 2.064B	<nc:PersonName> <nc:PersonGivenName/> <nc:PersonMiddleName/> <nc:PersonSurName/> </nc:PersonName>
NCR	2.079	<ebts:TransactionImagesRequestedQuantity/>
NMN	9.015	<ansi-nist:MinutiaeQuantity/>
NOT	2.088	<ebts:TransactionDescriptionText/>
NSR	1.11	<ansi-nist:TransactionImageResolutionDetails> <ansi-nist:NativeScanningResolutionValue/> </ansi-nist:TransactionImageResolutionDetails>
NTR	1.12	<ansi-nist:TransactionImageResolutionDetails> <ansi-nist:NominalTransmittingResolutionValue/> </ansi-nist:TransactionImageResolutionDetails>
OCA	2.009	<nc:CaseTrackingID/>
OCP	2.040	<ebts:PersonEmploymentAssociation> <nc:EmployeeOccupationText/> </ebts:PersonEmploymentAssociation>
OFC	2.053	<ebts:OffenseCategoryCode/>
OFR_METHOD	9.005B	<ansi-nist:MinutiaeReadingSystem> <ansi-nist:ReadingSystemCodingMethodCode/> </ansi-nist:MinutiaeReadingSystem>

EBTS Field Mnemonic	Field Number	NIEM Element
OFR_NAME	9.005A	<ansi-nist:MinutiaeReadingSystem> <ansi-nist:ReadingSystemName/> </ansi-nist:MinutiaeReadingSystem>
OFR_SUBSYS	9.005C	<ansi-nist:MinutiaeReadingSystem> <ansi-nist:ReadingSystemSubsystemIdentification> <nc:IdentificationID/> </ansi-nist:ReadingSystemSubsystemIdentification> </ansi-nist:MinutiaeReadingSystem>
ORI	1.08	<nc:OrganizationOtherIdentification> <nc:IdentificationID/> </nc:OrganizationOtherIdentification>
ORN	9.020	<ansi-nist:PositionUncertaintyValue/>
PAS	10.23	<ansi-nist:ImageCaptureDetail> <ansi-nist:CaptureSourceCode/> </ansi-nist:ImageCaptureDetail>
PAT	2.034	<ebts:FingerprintImageFinger> <ansi-nist:FingerPositionCode/> <ebts:FingerprintPatternClassificationCode/> </ebts:FingerprintImageFinger>
PATCL	2.034B	<ebts:FingerprintImageFinger> <ansi-nist:FingerPositionCode/> <ebts:FingerprintPatternClassificationCode/> </ebts:FingerprintImageFinger>
PEN	2.078	<ebts:TransactionResponseData> <ebts:TransactionPenetrationQueryResponsePercentage/> </ebts:TransactionResponseData>
PHD	10.005	<ansi-nist:ImageCaptureDetail> <ansi-nist:CaptureDate> <nc:Date/> </ansi-nist:CaptureDate> </ansi-nist:ImageCaptureDetail>
PHT	2.036	<nc:PersonDigitalImage> <nc:BinaryAvailableIndicator/> </nc:PersonDigitalImage>
POA	10.021	<ansi-nist:FaceImage3DPoseAngle> <ansi-nist:PosePitchAngleMeasure/ > <ansi-nist:PosePitchUncertaintyValue/> <ansi-nist:PoseRollAngleMeasure/> <ansi-nist:PoseRollUncertaintyValue/> <ansi-nist:PoseYawAngleMeasure/> <ansi-nist:PoseYawUncertaintyValue/> </ansi-nist:FaceImage3DPoseAngle>
POA	10.021	<ansi-nist:FaceImagePoseOffsetAngleMeasure/>
POB	2.020	<j:PersonBirthPlaceCode/>

EBTS Field Mnemonic	Field Number	NIEM Element
POS	10.020	<ansi-nist:FaceImageSubjectPoseCode/>
PPA	2.035	<j:PersonPalmPrint> <nc:BiometricImage> <nc:BinaryAvailableIndicator/> </nc:BiometricImage> </j:PersonPalmPrint>
PRY	1.06	<ansi-nist:TransactionPriorityValue/>
PTD	2.063	<ebts:PersonTypeDesignatorCode/>
PUM	9.021C, 9.022E	<ansi-nist:PositionUncertaintyValue/>
PXS	10.022	<ansi-nist:FaceImageAttribute> <ansi-nist:FaceImageAttributeCode/> <ansi-nist:FaceImageAttributeText/> </ansi-nist:FaceImageAttribute>
QDD	2.004	<ebts:TransactionQueryDepthCode/>
QMS	9.023C	<ansi-nist:MinutiaQualityValue/>
RAC	2.025	<nc:PersonRaceCode/>
RAP	2.070	<ansi-nist:RecordRapSheetRequestIndicator/>
RCD1	2.091	<ebts:FingerprintImageFinger> <ansi-nist:FingerPositionCode/> <ebts:FingerprintRidgeCountValue/> </ebts:FingerprintImageFinger>
RCD2	2.092	<ebts:FingerprintImageFinger> <ansi-nist:FingerPositionCode/> <ebts:FingerprintRidgeCountValue/> </ebts:FingerprintImageFinger>
RCN1	2.091B	<ebts:FingerprintRidgeCountValue/>
RCN2	2.092B	<ebts:FingerprintRidgeCountValue/>
REC	2.082	<ebts:TransactionResponseData> <ebts:TransactionResponseIndicator/> </ebts:TransactionResponseData>
RDG	9.011	<ansi-nist:MinutiaeRidgeCountIndicator/>
RES	2.041	<ebts:PersonResidenceAssociation> <nc:LocationAddress> <nc:StructuredAddress> <nc:LocationStreet> <nc:StreetNumberText/> <nc:StreetName/> </nc:LocationStreet> </nc:StructuredAddress> </nc:LocationAddress> </ebts:PersonResidenceAssociation>
RET	2.005	<ansi-nist:RecordRetentionIndicator/>
RFP	2.037	<nc:ActivityReasonText/>

EBTS Field Mnemonic	Field Number	NIEM Element
RSO	9.023M	<ebts:MinutiaOctantResidualValue/>
RSR	2.065	<ebts:TransactionResponseData> <ebts:TransactionRepositoryResponse> <ebts:RepositoryParameterText/> <ebts:RepositoryParameterValueText/> <ebts:RepositoryParameterPercentage/> </ebts:TransactionRepositoryResponse> </ebts:TransactionResponseData>
SAP	10.013	<ansi-nist:FaceImageAcquisitionProfileCode/>
SCNA	2.086	<ebts:AFISSegmentControlNumber/>
SCO	2.007	<ansi-nist:RecordForwardOrganizations> <nc:OrganizationOtherIdentification> <nc:IdentificationID/> </nc:OrganizationOtherIdentification> </ansi-nist:RecordForwardOrganizations>
SEC	10.027	<ansi-nist:FaceImageEyeColorAttributeCode/>
SEG	14.021	<ansi-nist:FingerprintImageMajorCasePrint> <ansi-nist:FingerPositionCode/> <ansi-nist:MajorCasePrintSegmentOffset> <ansi-nist:SegmentBottomVerticalCoordinateValue/> <ansi-nist:SegmentLeftHorizontalCoordinateValue/> <ansi-nist:SegmentRightHorizontalCoordinateValue/> <ansi-nist:SegmentTopVerticalCoordinateValue/> </ansi-nist:MajorCasePrintSegmentOffset> </ansi-nist:FingerprintImageMajorCasePrint>
SERNO	2.067C	<ansi-nist:ImageCaptureDetail> <ansi-nist:CaptureDeviceSerialNumberText/> </ansi-nist:ImageCaptureDetail>
SEX	2.024	<nc:PersonSexCode/>
SFP	10.029	<ansi-nist:FaceImageFeaturePoint> <ansi-nist:FeaturePointHorizontalCoordinateValue/> <ansi-nist:FeaturePointIdentification> <nc:IdentificationID/> </ansi-nist:FeaturePointIdentification> <ansi-nist:FeaturePointCategoryCode/> <ansi-nist:FeaturePointVerticalCoordinateValue/> </ansi-nist:FaceImageFeaturePoint>
SHC	10.028	<ansi-nist:FaceImageHairColorAttributeCode/>
SID	2.015	<nc:PersonStateIdentification> <nc:IdentificationID/> </nc:PersonStateIdentification>

EBTS Field Mnemonic	Field Number	NIEM Element
SLC		<nc:StructuredAddress> <nc:LocationCityName/> <nc:LocationStateNCICLSTACode/> </nc:StructuredAddress>
SLC	10.008	<ansi-nist:ImageScaleUnitsCode/>
SLE	2.055	<j:ArrestRelease> <nc:ActivityDescriptionText/> </j:ArrestRelease>
SMD	10.042	<ansi-nist:PhysicalFeatureDescriptionDetail> <ansi-nist:PhysicalFeatureCategoryCode/> <ansi-nist:PhysicalFeatureClassCode/> <ansi-nist:PhysicalFeatureDescriptionText/> <ansi-nist:PhysicalFeatureSubClassCode/> </ansi-nist:PhysicalFeatureDescriptionDetail>
SMS	10.041	<ansi-nist:PhysicalFeatureSize> <ansi-nist:PhysicalFeatureHeightMeasure/> <ansi-nist:PhysicalFeatureWidthMeasure/> </ansi-nist:PhysicalFeatureSize>
SMT	2.026	<nc:PersonPhysicalFeature> <nc:PhysicalFeatureCategoryCode/> </nc:PersonPhysicalFeature>
SMT	10.040	<ansi-nist:PhysicalFeatureNCICCode/>
SOC	2.016	<nc:PersonSSNIdentification> <nc:IdentificationID/> </nc:PersonSSNIdentification>
SQS	10.024	<ansi-nist:ImageQuality> <ansi-nist:QualityAlgorithmProductIdentification> <nc:IdentificationID/> </ansi-nist:QualityAlgorithmProductIdentification> <ansi-nist:QualityValue/> <ansi-nist:QualityMeasureVendorIdentification> <nc:IdentificationID/> </ansi-nist:QualityMeasureVendorIdentification> </ansi-nist:ImageQuality>
SRC	10.004, 14.004	<ansi-nist:ImageCaptureDetail> <ansi-nist:CaptureOrganization> <nc:OrganizationName/> <nc:OrganizationOtherIdentification> <nc:IdentificationID/> </nc:OrganizationOtherIdentification> </ansi-nist:CaptureOrganization> </ansi-nist:ImageCaptureDetail>
SRF	2.059	<ebts:TransactionSearchResultsCode/>

EBTS Field Mnemonic	Field Number	NIEM Element
SSD	2.054	<j:ArrestRelease> <nc:ActivityDate> <nc:Date/> </nc:ActivityDate> </j:ArrestRelease>
SXS	10.026	<ansi-nist:FaceImageDescriptionCode/>
TAA	2.087	<ebts:PersonAdultTreatmentIndicator/>
TCD	14.005	<ansi-nist:ImageCaptureDetail> <ansi-nist:CaptureDate> <nc:Date/> </ansi-nist:CaptureDate> </ansi-nist:ImageCaptureDetail>
TCN	1.09	<ansi-nist:TransactionControlIdentification> <nc:IdentificationID/> </ansi-nist:TransactionControlIdentification>
TCR	1.10	<ansi-nist:TransactionControlReferenceIdentification> <nc:IdentificationID/> </ansi-nist:TransactionControlReferenceIdentification>
TOT	1.04	<ansi-nist:TransactionCategoryCode/>
TSR	2.043	<ebts:RecordTransactionData> <ansi-nist:TransactionSearchRequestCategoryCode/> </ebts:RecordTransactionData>
ULF	2.083	<ebts:TransactionUnsolvedLatentFileIndicator/>
VEN	9.016A	<ansi-nist:MinutiaeReadingSystem> <ansi-nist:ReadingSystemName/> </ansi-nist:MinutiaeReadingSystem>
VER	1.02	<ansi-nist:TransactionMajorVersionValue/> <ansi-nist:TransactionMinorVersionValue/>
VID	9.016B	<ansi-nist:MinutiaeReadingSystem> <ansi-nist:ReadingSystemSubsystemIdentification> <nc:IdentificationID/> </ansi-nist:ReadingSystemSubsystemIdentification> </ansi-nist:MinutiaeReadingSystem>
VLL	7.07, 10.007	<ansi-nist:ImageVerticalLineLengthPixelQuantity/>
VPS	10.010	<ansi-nist:ImageVerticalPixelDensityValue/>
WGT	2.029	<nc:PersonWeightMeasure> <nc:MeasurePointValue/> </nc:PersonWeightMeasure>

EBTS Field Mnemonic	Field Number	NIEM Element
WTR	2.030	<code><nc:PersonWeightMeasure></code> <code> <nc:MeasureRangeValue></code> <code> <nc:RangeMinimumValue/></code> <code> <nc:RangeMaximumValue/></code> <code> </nc:MeasureRangeValue></code> <code></nc:PersonWeightMeasure></code>
XYM	9.018A, 9.021A, 9.022A	<code><ansi-nist:PositionBottomCoordinateValue/></code> <code><ansi-nist:PositionHorizontalCoordinateValue/></code> <code><ansi-nist:PositionTopCoordinateValue/></code> <code><ansi-nist:PositionVerticalCoordinateValue/></code>
XYP	9.019A -9.019D	<code><ansi-nist:MinutiaDetail></code> <code> <ansi-nist:MinutiaPosition></code> <code> <ansi-nist:PositionHorizontalCoordinateValue/></code> <code> <ansi-nist:PositionThetaAngleMeasure/></code> <code> <ansi-nist:PositionVerticalCoordinateValue/></code> <code> </ansi-nist:MinutiaPosition></code> <code></ansi-nist:MinutiaDetail></code>

4.2. Minimal Properties Set

FBI EBTS XML inbound and outbound messages should have at least the XML processing instruction, a namespace definition, a transaction record, and a descriptive record.

4.3. Additional Business Rules

Existing Data requirements of the Electronic Fingerprint Transmission Specification (EFTS) version 7.1 apply to the FBI EBTS XML content. It is strongly recommended that the EBTS version 8.001 Manual be referenced for appropriate FBI EBTS data value and format.

The order of elements in the schema and in the sample XML files might be different from the order of FBI EBTS transaction elements in the legacy format because of the structure of NIEM. Following the NIEM Naming and Design Rules (NDR) FBI EBTS extension elements are added in alphabetical order after existing NIEM elements. Several MFC's consist of multiple fields that are separated by the order of NIEM (e.g., Employer Name and Address (EAD) – Employer Name is separated from the Employer Address by the Occupation (OCP) field).

Date values are received in the XML format as YYYY-MM-DD and are stored as YYYYMMDD in EBTS. The XML processing system will strip the dashes from the inbound XML message and insert them on the outbound XML message.

Indicator values are received in the XML format as Boolean “true” or “false” values and are stored in EBTS as values “Y” or “N.” The XML processing system will map the “true” or “false” values to “Y” or “N” on inbound messages and will do the reverse when

generating outbound XML message. Indicators that have values not limited to “Y” and “N” are captured as enumerated list of specified values.

The Electronic Rap Sheet (ERS 2.075) has been created in GJXDM and will not be embedded within an FBI EBTS message but rather sent as a separate transaction following the receipt of an FBI EBTS message. However this will be sent in one transaction upon the Electronic Rap Sheet migration to NIEM.

4.3.1. Message Field Mnemonic Sets

Certain MFCs for the FBI EBTS transactions are sets made up of several fields. These fields have been represented in the existing set as well as individual MFCs in section 4.1.2.

EBTS MFC	Field Number	SET MFCS
AMP	2.084	AMPCD, FGP
ASL	2.047	DOO, AOL
CAN	2.064	NAM, FNU
CIN	2.010	CIN_PRE, CIN_ID
CRA	9.008	XYM, DID, DID, DID, PUM, DID
CRP	9.021	XYM, DID, DID, DID, PUM, DID
CSL	2.051	CDD, COL, CPL
DLT	9.009	XYM, DID, DID, DID, PUM, DID
DLA	9.022	XYM, DID, DID, DID, PUM, DID
MAT	9.023	COF, XYP
MRC	9.012	MDX, MXYTHETA
OFR	9.005	OFR_METHOD, OFR_NAME, OFR_SUBSYS
PAT	2.034	PATCL, FGP

4.3.2. Fingerprint Images

Specifications for this image are defined in the ANSI-NIST Type 4 Record and ANSI-NIST Type 14 Record based on the resolution requirements.

4.3.3. User Defined Images

Specifications for this image are based on the ANSI-NIST Type 7 Record. The FBI EBTS has additional requirements for this message and therefore has extended the ANSI-NIST User Defined Image requirements to include information specific to a Biometric Identification message.

4.3.4. Minutiae Data

Specifications for this data are based on the ANSI-NIST Type 9 Record. The FBI EBTS has additional requirements for this message and therefore has extended the ANSI-NIST Minutiae requirements to include information specific to a Biometric Identification message.

4.3.5. Facial Images

Specifications for this image are defined in the ANSI-NIST Type 10 Record, using the fields specific for a Facial Image Record.

4.3.6. Latent Print Images

Specifications for this image are defined in the ANSI-NIST Type 13 Record.

4.3.7. Major Case Print

Specifications for this image are based on the ANSI-NIST Type 14 Record.

4.3.8. Palmprint Images

Specifications for this image are based on the ANSI-NIST Type 15 Record.

4.3.9. Iris Images

Specifications for this image are based on the ANSI-NIST Type 17 Record.

4.3.10. CBEFF Biometric Data

Specifications for this data are based on the ANSI-NIST Type 99 Record.

4.4. Messages Layout

The sample XML data instances that are included to support this package contain element representations to capture the various possible scenarios. An FBI EBTS XML message will not include all the elements defined in the samples; all the elements are represented in the sample to capture their structures and formats in a valid XML FBI EBTS message. The goal of this representation is to help guide agencies and vendors in their design of systems for FBI EBTS XML interchange.

Type substitution can be used as XML attributes in XML instance messages to enforce the constraints that have been implemented in the extension schema and in the various document schemas.

4.4.1. Inbound Messages

An individual XML inbound transaction, contains at least two records: a Transaction Record (Type 1 Record) and a User Defined Descriptive Text Record (Type 2 Record). Inbound transactions may also contain several Image Records including: Fingerprint Images, User Defined Images, and Facial and SMT Images. Inbound transactions may also contain records pertaining to Minutiae Information.

The additional record requirements for each record type are as follows:

- Ten-Print Criminal Justice Submissions:
 - 14 – Type 4 or Type 14 Records
 - 10 Rolled Impressions
 - 4 Sets of Plain Impressions

- 0-20 – Type 14 Major Case Print Images
- 0-8 Type 15 Palmprint Records
- 0-N Type-10 Records containing photos
- 0-2 Type-17 Iris image Records
- 0-N Type-99 CBEFF Records
- Ten-Print Non-Criminal Justice Submissions:
 - 14 – Type 4 or Type 14 Fingerprint Image Records
 - 10 Rolled Impressions
 - 4 Sets of Plain Impressions
 - OR 3 Type 14 records (non-criminal justice purposes only)
 - 2 Plain Simultaneous Four Finger Impressions
 - 1 Plain Left and Right Thumb Impression
 - OR 2-10 Type 4 or Type 14 Flat or Rolled Images AND
 - 0-12 Type 14 Major Case Print Images AND
 - 0-8 Type 15 Palmprint Records
 - 0-N Type-10 Records Containing Photos
 - 0-2 Type-17 Iris Image Records
 - 0-N Type-99 CBEFF Records
- Ten-Print Searches:
 - 1-14 Type-4 or Type-14 Fingerprint Image Records
 - OR 1-10 Type-9 Fingerprint Features Records
- Latent Submissions:
 - 1-14 Type-4 or Type-13 Fingerprint Image Records
 - 1-10 for Latent Submissions
 - 14 for Comparison Ten-print Fingerprint Submissions
 - 14 for Major Case Submissions
 - OR 1-n Type-7 Records
- Latent Searches:
 - 1-10 Type-4 Fingerprint Image Records
 - OR 1-10 Type-13 Fingerprint Image Records
 - OR 1-10 Type-7 Records
 - 1-10 Type-9 Features Records
- Electronic Requests to Upgrade Fingerprint Images:
 - 14 Type-4 or Type-14 Fingerprint Image Records.

4.4.2. Response Messages

An individual XML outbound transaction contains at least two records: a Transaction Record and a User Defined Descriptive Text Record. Information pertaining to the actual response will be contained within the User Defined Descriptive Text Record. The response message may also contain Fingerprint Images, User Defined Images, Facial and SMT Images and Minutiae Information Records.

The User Defined Descriptive Text Record of a response Message will contain a Transaction Response Data Section, which has information specific to an EBTS response transaction, including fields specifying any action or direction for the user to take upon

receiving the transaction, error messages and other detailed information pertaining to the results of a search.

Additional records that may be returned by the responses are as follows:

- Ten-Print Submission Responses:
 - 0-1 Type-10 Photo record containing the most recent mug shot
- Ten-Print Search Responses:
 - 0-14 Type-4 or Type-14 Fingerprint Image Records (SRT only)
 - 0-1 Type-10 Photo record containing the most recent full frontal photo (RPSR only)
- Latent Submission Responses:
 - 0-14 Type-4 or Type-14 Fingerprint Image Records (LSR only)
- Latent Search Responses:
 - 0-NCR Type-4 or Type-14 Fingerprint Image Records
- Remote Requests for Fingerprint Image Responses:
 - 0-14 Type-4 or Type-14 Fingerprint Image Records (IRR only)
 - 0-14 Type-9 Features Records
 - 0-8 Type-15 Palmprint Images
 - 0-2 Type-17 Iris Images
 - 0-1 Type-7 or Type-13 Latent Images
- Criminal Subject Photo Request Response:
 - 1 -10 Type-10 Image Records.

5. Samples

To help agencies, users and vendors design and develop their XML processing system for FBI EBTS messages, the FBI has provided as part of this Interface Definition Package sample EBTS XML messages with “sanitized” content.

5.1. Samples XML Instances

Some of the FBI EBTS XML messages include:

EBTS Schema Package\1.0.0\criminalsubjectphoto

- SampleCriminalSubjectPhotoDeleteRequestResponseTransaction.xml
- SampleCriminalSubjectPhotoRequestResponseTransaction.xml
- SampleCriminalSubjectPhotoDeleteRequestTransaction.xml
- SampleCriminalSubjectPhotoRequestTransaction.xml

EBTS Schema Package\1.0.0\fingerprint

- SampleFingerprintImageRequestResponseTransaction.xml
- SampleFingerprintImageRequestTransaction.xml
- SampleFingerprintImageResponseSummaryTransaction.xml
- SampleFingerprintImageSubmissionResponseTransaction.xml

- SampleFingerprintImageSubmissionTransaction.xml
- SampleImageErrorResponseTransaction.xml

EBTS Schema Package\1.0.0\latentprint

- SampleAdministrativeErrorResponseTransaction.xml
- SampleComparisonFingerprintImageSubmissionTransaction.xml
- SampleEvaluationLatentFingerprintSubmissionRequestTransaction.xml
- SampleLatentFingerprintFeaturesSearchTransaction.xml
- SampleLatentFingerprintImageSearchTransaction.xml
- SampleLatentFingerprintImageSubmissionTransaction.xml
- SampleLatentPenetrationQueryTransaction.xml
- SampleLatentPenetrationResponseTransaction.xml
- SampleLatentRepositoryStatisticsQueryTransaction.xml
- SampleLatentRepositoryStatisticsResponseTransaction.xml
- SampleLatentSearchStatusandModificationQueryTransaction.xml
- SampleLatentSearchStatusandModificationResponseTransaction.xml
- SampleLatentSubmissionResultsTransaction.xml
- SampleLatentTransactionErrorTransaction.xml
- SampleMajorCaseImageSubmissionTransaction.xml
- SampleNotificationofActionResponseTransaction.xml
- SampleSearchResultsLatentTransaction.xml
- SampleUnsolicitedUnsolvedLatentDeleteTransaction.xml
- SampleUnsolvedLatentAddConfirmRequestTransaction.xml
- SampleUnsolvedLatentAddConfirmResponseTransaction.xml
- SampleUnsolvedLatentDeleteResponseTransaction.xml
- SampleUnsolvedLatentMatchResponseTransaction.xml
- SampleUnsolvedLatentRecordDeleteRequestTransaction.xml

EBTS Schema Package\1.0.0\tenprint

- SampleAmnesiaVictimTransaction.xml
- SampleCriminalFingerprintCardDirectRouteTransaction.xml
- SampleCriminalFingerprintCardProcessingNonUrgentTransaction.xml
- SampleCriminalTenPrintAnswerRequiredTransaction.xml
- SampleCriminalTenPrintNoAnswerTransaction.xml
- SampleElectronicSubmissionResultsTransaction.xml
- SampleFederalApplicantNoChargeTransaction.xml
- SampleFederalApplicantUserFeeTransaction.xml
- SampleFederalNoChargeDirectRouteTransaction.xml
- SampleKnownDeceasedTransaction.xml
- SampleMiscellaneousApplicantCivilTransaction.xml
- SampleMissingPersonTransaction.xml
- SampleNonFederalAdvancedPaymentTransaction.xml
- SampleNonFederalApplicantUserFeeTransaction.xml
- SampleNonFederalNoChargeDirectRouteTransaction.xml

- SampleRapidPrintImageResponseTransaction.xml
- SampleRapidPrintImageSearchTransaction.xml
- SampleTenPrintFingerprintFeaturesSearchTransaction.xml
- SampleTenPrintFingerprintImageSearchTransaction.xml
- SampleTenPrintRapSheetTransaction.xml
- SampleTenPrintSearchResultsTransaction.xml
- SampleTenPrintTransactionErrorTransaction.xml
- SampleUnknownDeceasedTransaction.xml

6. Development

The EBTS IEP was developed by the Federal Bureau of Investigation (FBI) Criminal Justice Information Services (CJIS) Division. The FBI developed this IEP in conjunction with the ANSI-NIST/ITL XML leadership team.

6.1. Participants

The following individuals have somehow contributed to the drafting of EBTS 8.001 XML specification.

Name	Organization
Ast, Terri	FBI Contractor
Coleman, Gerry	Wisconsin DOJ
Embley, Paul	National Center for State Courts (NCSC)
Garris, Mike	NIST
Gerst, James	FBI
Hopper, Tom	FBI
Kindl, Mark	Georgia Tech Research Institute (GTRI)
Medlin, Christina	GTRI
McCabe, Mike	NIST
Michaels, Ross	NIST
Newton, Elaine	NIST
Shahram, Orandi	NIST
Swann, Scott	FBI
Wade, Joe	FBI Contractor
Yuh, Patrice	FBI

6.2. Process:

Important meeting dates during the development of EBTS XML Information Exchange Package include:

To design and implement our Information Exchange Package, we developed a strategy based on Unified Modeling Language recommendation including:

- Data discovery, an analysis phase during which we mapped EBTS elements to NIEM base elements and to augmented data
- Data Description, a design phase during which we organized data based on the business relation between them; during this phase, we capture the semantic and syntactic structure of data
- Data review, a phase during which internal review and external reviews were conducted
- Data implementation and schema generation, an implementation phase that also focused on validation
- Data validation phase focused on ensuring that schemas and instance documents follow NIEM rules

The EBTS XML Data Reference Model was developed by leveraging from GTRI approach of using an object-oriented framework to define elements. NIEM types were used as the based types and our augmentation data was added to them while allowing reuse of that data. The differentiation of augmentation data and base data is handled with the namespace prefix. Base data are associated with jxdm namespace while augmentation data are associated with ncic namespace or a file-specific namespace.

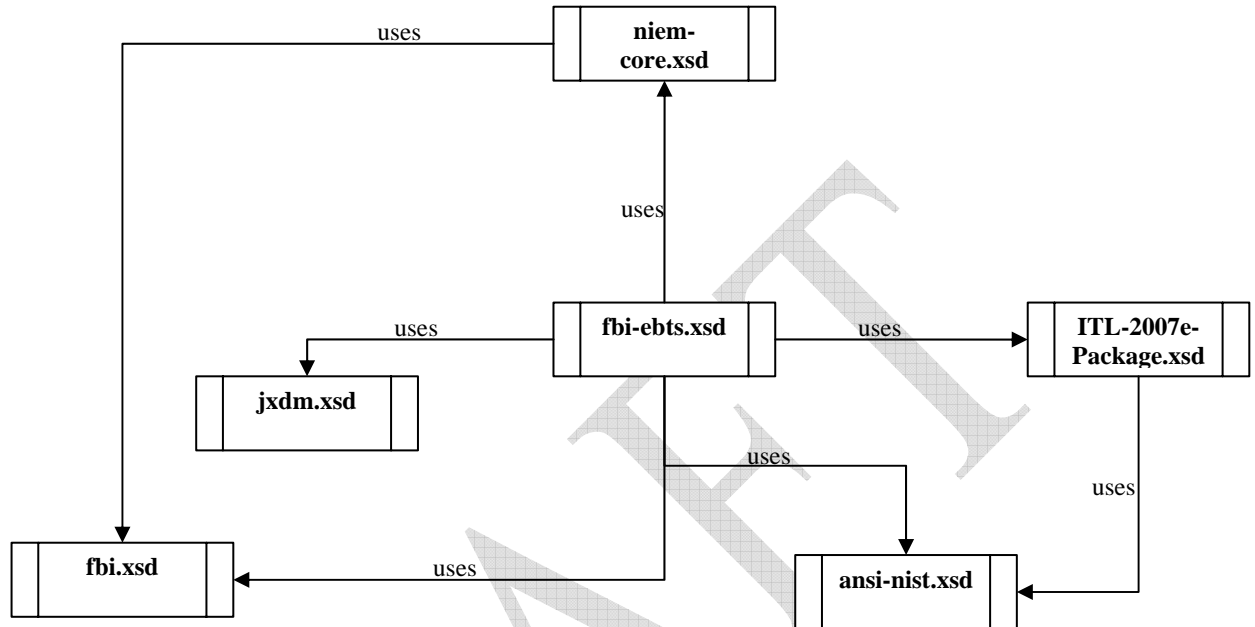
The schema development environment of choice was XMLSpy; which enabled the efficient development and validation of schemas. XMLSpy also enabled the integration of sample XML instance data with the generated schemas and validation of business and constraint requirements. This validation also ensured that augmented data is applied to objects of the expected type and that instances follow NIEM rules.

A highly consistent method for defining XML instance data was used in which messages were defined using exact cardinality and exact sequences to help users and vendors generate messages in the expected formats.

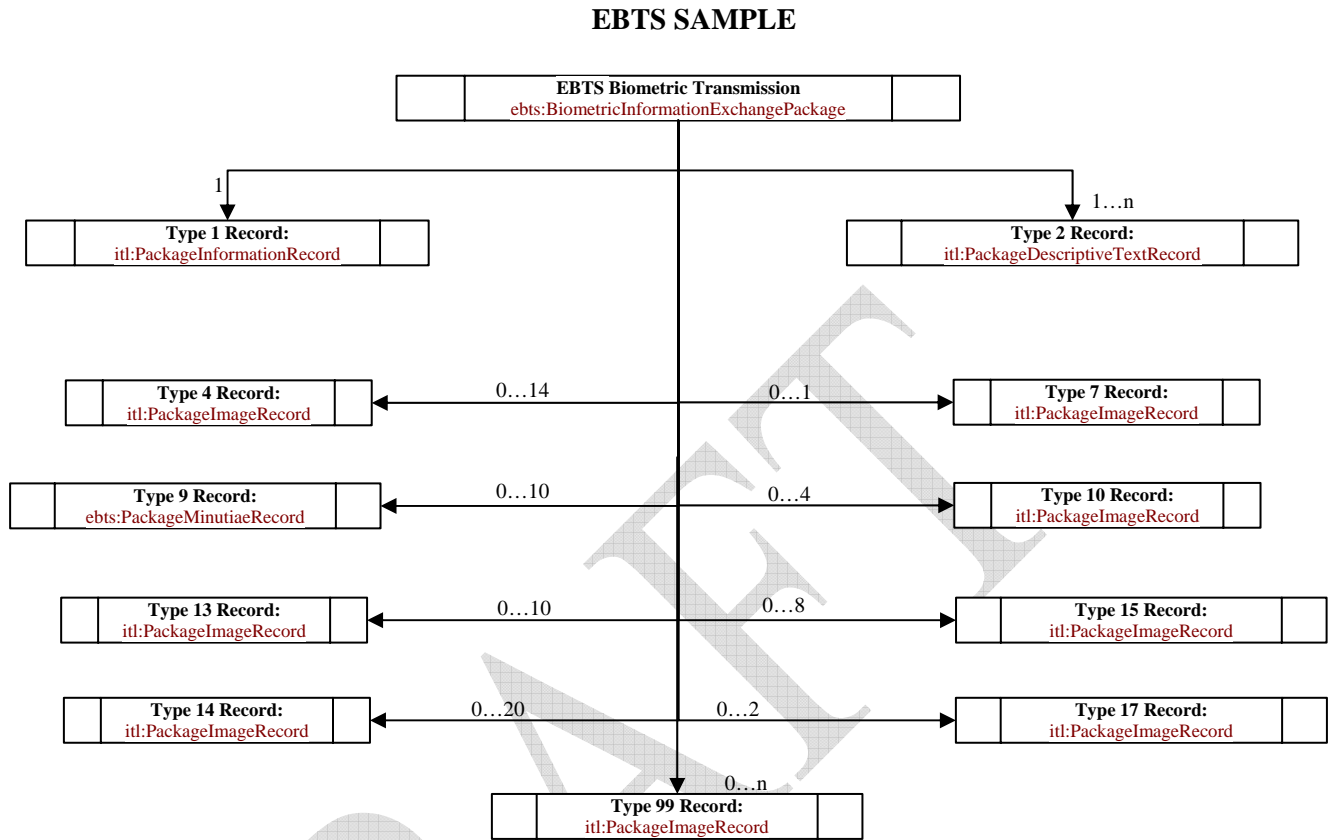
6.3. Development Artifacts:

6.3.1. Schema Model Diagram

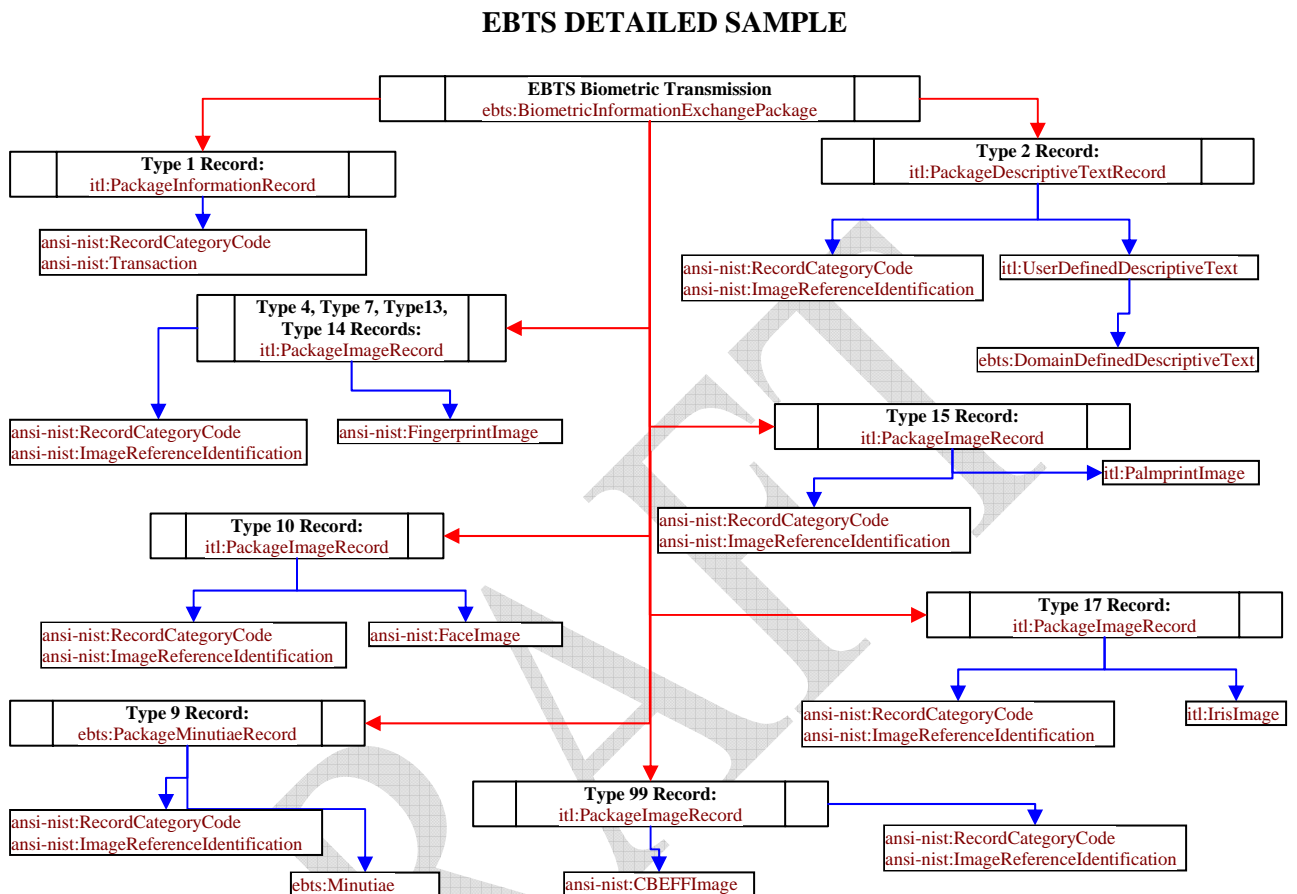
EBTS SCHEMA DIAGRAM



6.3.1.1. Transaction Model Diagram



6.3.1.2. Detailed Transaction Model Diagram



6.3.2. XML Mapping Documents

The XML mapping documents are spreadsheets that contain EBTS message fields codes and their equivalent representation in XML; these documents also display the layout of elements in relation with the various XML messages.

The various XML mapping documents to support the Information Exchange Package are under:

- EBTS Schema Package\ebts\1.0.0\tenprint\TenPrintXMLMapping.xls
- EBTS Schema Package\ebts\1.0.0\latentprint\LatentXMLMapping.xls
- EBTS Schema Package\ebts\1.0.0\fingerpint\FingerprintXMLMapping.xls
- EBTS Schema Package\ebts\1.0.0\criminalsubjectphoto\CriminalSubjectPhotoXMLMapping.xls

7. Testing and Conformance

7.1. Testing

7.2. Conformance

ANSI-NIST recognized its support of the business model demonstrated in the FBI CJIS Division's EBTS Specification and IEPD.

Systems claiming conformance with this standard shall implement the transmitting and/or receiving record types as defined by the ANSI-NIST and EBTS Specifications. At a minimum they must be capable of transmitting and receiving Type-1 and Type-2 records. However in order to transmit a meaningful and EBTS compliant message systems must be able to transmit a minimum of:

- Ten-Print Submissions: Type-4 OR Type-14 Records.
- Ten-Print Searches: Type-4, Type-9 OR Type-14 Records.
- Latent Submissions: Type-4, Type-7, OR Type-13 Records.
- Latent Searches: Type-4, Type-7, Type-9, OR Type-13 Records.
- Electronic Requests to Upgrade Fingerprint Images: Type-4 OR Type-14 Records.

In order to receive a meaningful EBTS message systems should be able to receive a minimum of:

- Ten-Print Submission Responses: Type-10 Photo Records
- Ten-Print Search Responses: Type-4 OR Type-14 Records.
- Latent Submission Responses: Type-4 OR Type-14 Records.
- Latent Search Responses: Type-4 OR Type-14 Records.
- Remote Requests for Fingerprint Image Responses: Type-4, Type-7, Type-9, Type-13, Type-14, Type-15 OR Type-17 Records.
- Criminal Subject Photo Request Response: Type-10 Photo Records.

Implementers may not introduce new elements or record types not supported by EBTS. All required elements and records must be present in a conforming instance document even if the implementers standards do not strictly enforce the requirement.

8. Feedback