DEPARTAMENTO DE SALUD

# Deliverable 209-ICD Demographic Registry Batch Participant Information: Interface Control Document (ICD)

## MEDITI3G Project
## Government of Puerto Rico

**Version 3.1**
**September 22, 2023**

**Contract #2022-DS0707-E**

# Document Revision History

*Table 1 - Document Revision History*

| Version Number | Date | Description |
|---|---|---|
| **1.0** | 12/09/2019 | Submission of the document for approval. |
| **2.0** | 12/11/2020 | The following changes were made to the document:<br>• Changed throughout the document the use of "shall", "should", "would", and "could" to "shall".<br>• Title page updated with resubmission date.<br>• Footer updated with re-submission date.<br>• Table 2 and 3 updated based on project personnel/stakeholder changes.<br>• Page 2, Section 1.1, Paragraph 1: Added Comma.<br>• Page 2, Section 1.1, Paragraph 1: Removed "In addition".<br>• Page 2, Section 1.2, Paragraph 1: Changed requests with collection of requests.<br>• Page 3, Section 1.3, Paragraph 1: Added paragraph.<br>• Page 3, Section 1.3, Paragraph 2: Added DEMREGG team members to the table. Removed IV&V members and updated the PMO and SI list.<br>• Page 7, Section 3.1, Paragraph 2: Updated the first assumption.<br>• Page 7, Section 3.1, Paragraph 9: Updated the eight assumption.<br>• Page 9, Section 4.1, Paragraph 5: replaced the text in the bullet.<br>• Page 11, Section 4.2, Paragraph 5: Sentence was added.<br>• Page 11, Section 4.3, Paragraph 1: The first sentence was updated.<br>• Page 20, Section 5.1.3, Paragraph 3: Included the PGP encryption details.<br>• Page 22, Section 5.1.3, Paragraph 2: Included the PGP encryption details. Added new step.<br>• Page 24, Section 5.1.5, Paragraph 1: Replaces "mechanism" with "format".<br>• Page 25, Section 5.1.5.1, Paragraph 1: Replaced "plain text files" with "encrypted text files".<br>• Page 26, Section 5.1.5.3, Paragraph 2: Added the last sentence.<br>• Page 28, Section 5.1.5.3.1, Paragraph 1: Updated the table data groups.<br>• Page 33, Section 5.1.5.3.1.2, Paragraph 2: Updated the table data groups. |



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| | | |
|---|---|---|
| | | • Page 42, Section 5.1.5.3.2.1, Paragraph 2: Updated the table data groups.<br>• Page 49, Section 5.1.5.3.3.1, Table 19: Updated the table and added the column "Type of Protected Data".<br>• Page 55, Section 5.1.5.3.2, Table 20: Updated the table and added the column "Type of Protected Data"<br>• Page 54, Section 5.1.5.3.2, Table 20: Eliminated the StateHubError model.<br>• Page 54, Section 5.1.5.3.2, Table 20: Updated the field LocalAgencyBatchResponseCode to "Y".<br>• Page 66, Section 5.1.7: Added paragraph 11 to include details on specific user roles with access to FTI data on the State Hub.<br>• Page 67, Section 5.1.7: Added paragraph 12 to include details on security and release management.<br>• Page 77, Section 11, Changed "arrangement" to "plan" in the text. |
| **3.0** | 3/31/2022 | The following changes were made to the document:<br>• Updates to section 1 and its subsections<br>• Updates to section 2<br>• Updates to section 3 and its subsections<br>• Updates to section 4 and its subsections<br>• Update to section 5.1.1<br>• Update to section 5.1.3 and its tables<br>• Update to section 5.1.4<br>• Update to section 5.1.5, its subsections, its diagrams and its tables<br>• Update to section 5.1.6, its subsections, its diagrams and its tables<br>• Update to sections 6.1 and 6.2<br>• Update to section 7<br>• Update to section 9<br>• Update to section 11 (Appendix A)<br>• Update to section 12 (Appendix B) |
| **3.1** | 9/22/2023 | • Updated document version number to 3.1, and re-submission date.<br>• Page 16, Section 5.1.2, bullet 4: Updated bullet 4.<br>• Page 24, Section 5.1.4, Paragraph 1: Updated the second sentence.<br>• Page 25, Section 5.1.5.2, Paragraph 1: Updated the sentence 4 and 5.<br>• Page 47, Section 9, Table 25: Updated the item 1.<br>• Page 47, Section 9, Table 25: Updated the item 2. |



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# Document Approval

*Table 2 - Document Approval*

| Stakeholder Name | Stakeholder Role | Stakeholder Signature | Signature Date (MM/DD/YYYY) |
|---|---|---|---|
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# 1 Introduction

The following document shall describe in detail the interaction of a Data Verification Interface, the Demographic Registry Batch Participant Information Interface (henceforth Local Interface), an interface between the Requestor System and the Demographic Registry System. The Requestor System shall send a batch request file to the interface to gather information about the applicant/beneficiary from the Demographic Registry System. The interface shall collect the information returned by the Demographic Registry (henceforth Local Agency) and return it to the Requestor System. As part of the efforts to move forward with MEDITI3G (Medicaid Integrated Technology Initiative Third Generation), the Local Interface shall be part of the State Data Verification Hub (henceforth State Hub).

## 1.1 Purpose of Interface Control

This Interface Control Document (ICD) documents and tracks the information required to define the Local Interface, that establishes connection and interaction between the Requestor System and the Demographic Registry aiming to bridge access to critical participant information from the Local Agency through the State Hub via batch transactions. This document establishes the specifications that the Local Interface shall contain in general, the connectivity standards between the systems, the message formatting to communicate the systems, which capabilities shall be supported by the interface, and the security considerations that shall be met.

The intended audience of the Local Interface ICD is composed of all project stakeholders, including the project sponsor, senior leadership, and the project team.

## 1.2 Scope

This document describes the service interactions, assumptions, activities, constraints, process flow, and data elements for the Local Interface.

The following list defines the functionalities that are within the scope of this deliverable:

- The MEDITI3G System shall submit the PRMP participant information collection of requests to be processed by the Local Interface to look up the information in the Demographic Registry System via batch transactions.
- The interface shall convert the responses to a standard format (NIEM).
- Request and response schema validations shall be done by the Local Interface. All specified/provided rules are explained in detail in section 5: Detailed Interface Requirements.
- Log Local Interface audit trail.
- Errors shall be classified as system or data errors and shall be logged independently within the Local Interface for reference purposes.
    - System errors are those related (but not limited) to (1) database connection error and (2) data extraction query timeout.
    - Data errors are those that occurred while enforcing the data validation rules described in section 5: Detailed Interface Requirements.
- The Local Interface shall be MARS-E and HIPAA compliant and security measures shall be performed in order to follow PRDoH security standards and procedures. To comply with security guidelines rules, all extracted data shall be handled in the State Hub internal network and not be transmitted outside the network while being processed. The requests and responses shall not be persisted in the State Hub, except for the files that are not processed within 14 days.

## 1.3 Team Members

The following team members shall provide their feedback for this document.

*Table 3 - Team Members*

| Participants | Organization |
|---|---|
| Héctor A. Bonilla Báez | DEMREG |
| Jose Irizarry | DEMREG |
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| Sachin Shah | Redmane |
| Tanvi Gupta | Redmane |
| Christy Schilling | BerryDunn |

## 1.4 Glossary of Terms

*Table 4 - Glossary of Terms*

| Acronym/Term | Definition |
|---|---|
| **CMS** | Centers for Medicare & Medicaid Services |
| **DEMREG** | Demographic Registry |
| **DOB** | Date of Birth |
| **EFT** | Enterprise File Transfer |
| **FIPS** | Federal Information Processing Standards |
| **GB** | Gigabyte |
| **GHP** | Government Health Plan |
| **HIPAA** | Health Insurance Portability and Accountability Act |
| **HIT** | Health Information Technology |
| **HTTPS** | Hypertext Transfer Protocol Secure |
| **ICD** | Interface Control Document |
| **IV&V** | Independent Verification & Validation |

| | |
|---|---|
| **KB** | Knowledge Base (usually referred to Microsoft issued patches) |
| **MARS-E** | Minimum Acceptable Risk Standards for Exchanges |
| **MOU** | Memorandum of Understanding |
| **NACK** | Negative Acknowledgment (NACK) files are the way the Local Interface shall transmit to the Requestor System that an error occurred |
| **NIEM** | National Information Exchange Model |
| **OIAT** | Puerto Rico Department of Health's System Information Department. In Spanish means: "Oficina de Informática y Avances Tecnológicos" |
| **PII** | Personally Identifiable Information |
| **PMO** | Project Management Office |
| **PRDoH** | Puerto Rico Department of Health |
| **MEDITI3G** | Medicaid Integrated Technology Initiative Third Generation |
| **Requestor System** | Name to identify the solution used by the PRMP case workers for eligibility management. |
| **PRMP** | Puerto Rico Medicaid Program |
| **RSA** | Rivest-Shamir-Adleman Cryptosystem |
| **SHA** | Secure Hash Algorithm |
| **SFTP** | Secure File Transfer Protocol |
| **SI** | System Integrator |
| **SOAP** | Simple Object Access Protocol |
| **SSH** | Secure Shell |
| **SSN** | Social Security Number |
| **TDS** | Trusted Data Source |
| **TLS** | Transport Layer Security |
| **UML** | Unified Modeling Language |
| **XML** | Extensible Markup Language |

# 2 Overview

The Demographic Registry of Puerto Rico's main functions are the registration of vital events and data collection, including births, deaths and marriages, the issuance of certifications of these events, the custody and conservation of civil books (1885-1931) and the production of vital statistics.

The Local Interface presents a means of electronically exchanging birth and death information between the Demographic Registry System and the Requestor System via batch transactions. This interface shall interact with the Demographic Registry System through requests sent to the Demographic Registry Batch Environment, enabling the Requestor System to gather the data it needs to help PRMP determine the eligibility of an applicant/beneficiary automatically. This reduces the population that would have to visit the PRMP offices for renewal of eligibility for PRMP benefits.

The Requestor System, through these batch requests, shall request the Local Interface for information regarding an applicant and/or beneficiary. The batch requests shall contain an applicant/beneficiary basic personal identifiable information. The Local Interface shall interact with the Local Agency to find the information in their system and return it to the Requestor System.

This solution establishes that the Local Interface be implemented as core components of the State Hub in an Azure Government environment to guarantee high availability, redundancy, data integrity and data security using the HIPAA Privacy Rule, HIPAA Security Rule, and CMS Standards and Conditions as the basis.

# 3 Assumptions/Constraints/Risks

There are several factors that influence the expectations of the Local Interface. They have been categorized as assumptions, constraints, and risks.

## 3.1 Assumptions

The following assumptions apply to the DEMREG Batch Interface:

1. There shall be a signed Memorandum of Understanding (MOU) agreement in place between PRMP and DEMREG to allow the sharing of DEMREG System information. This MOU shall define the terms and conditions for the exchange of information.
2. Azure Government cloud shall maintain backward compatibility for up to three (3) versions allowing enough time to update code for new offerings of services and components. The inclusion of new offerings later shall not negatively impact compatibility and compliance with HIPAA and MARS-E.
3. The Requestor System shall use the interface to assist Medicaid in determining renewal eligibility of PRMP participants.
4. The Demographic Registry shall notify when downtime is expected for their Batch Environment.
5. The Demographic Registry shall provide a single endpoint for both birth and death information.
6. The Demographic Registry Batch Environment shall accept SSN, date of birth, and full name as the request's parameters.
7. Puerto Rico Department of Health's System Information Department (OIAT, in Spanish: "Oficina de Informática y Avances Tecnológicos"), which is responsible for the development and implementation of technological services for all the Department of Health dependencies in Puerto Rico, shall establish the necessary procedures to grant access to the real time request endpoint.

## 3.2 Constraints

This section defines limitations, such as external dependencies, identified during the interfaces' requirements gathering.

1. The interface shall be dedicated to connecting to a single Trusted Data Source (TDS) for requesting data.
2. The Demographic Registry does not currently provide the necessary endpoint to process batch transactions.
3. The State Hub, the environment that shall contain the Local Interface, shall not manage files greater than 100 Gigabytes (GB).
4. The Demographic Registry Batch Environment availability for managing batch requests could be limited to a specific day. The Local Interface requests to the Batch Environment shall be restricted to times between 7:00 PM to 12:00 AM local time.
5. The Federal Hub implements NIEM 2.0 and has not indicated when they would upgrade. Since newer versions are not backward compatible with older versions, the State Hub and the Local Interfaces shall also use NIEM 2.0.

## 3.3 Risks

Certain risks have been identified that may affect compliance with some of the Local Interface requirements for this deliverable. These risks are being addressed at the time of creating this document and may be resolved after delivering this document. Identified risks are:

6. **EE-RI00102**: Some agencies expressed concern regarding the lack of communication between the Secretary of the Department and the individual agencies that has caused project delays in the past due to a lack of funding. Due to this fact, these agencies might not wish to participate in the Data Sharing Agreement.
7. **EE-RI00127**: If a local agency is not able to make the necessary changes to enable effective data exchange between the State Hub and the agency, the interface schedule may be at risk.
8. **EE-RI00155:** If the MOUs between local P.R. agencies are not discussed and approved by PRMP, the current timeline for MEDITI3G implementation is unlikely to be met.
9. **EE-RI00162**: The selected platform for the implementation of the State Hub might not provide all capabilities necessary to comply with all the requirements.
10. **EE-RI00161**: State Hub requirements may change once Wovenware completes requirements gathering with local agencies for the interfaces. There is still the possibility of an agency using a technology that has not been considered yet.

11. **EE-RI00192**: The established response time for the processing of batch request files could be missed if the Local Agency does not provide the means to process a batch request file and the interface in charge of processing every single request in the batch file receives more than one batch files before the first batch file has finished processing.
12. **EE-RI00214**: An Agency may want to limit the quantity of requests that can be made by SSN or participant in a time frame.

# 4 General Interface Requirements

This section describes the general functional decomposition of the Local Interface used by Requestor System when requesting an applicant's/beneficiary's information from the Demographic Registry System. In addition, it shall cover the security and integrity requirements needed for the request to be considered successful and achievable.

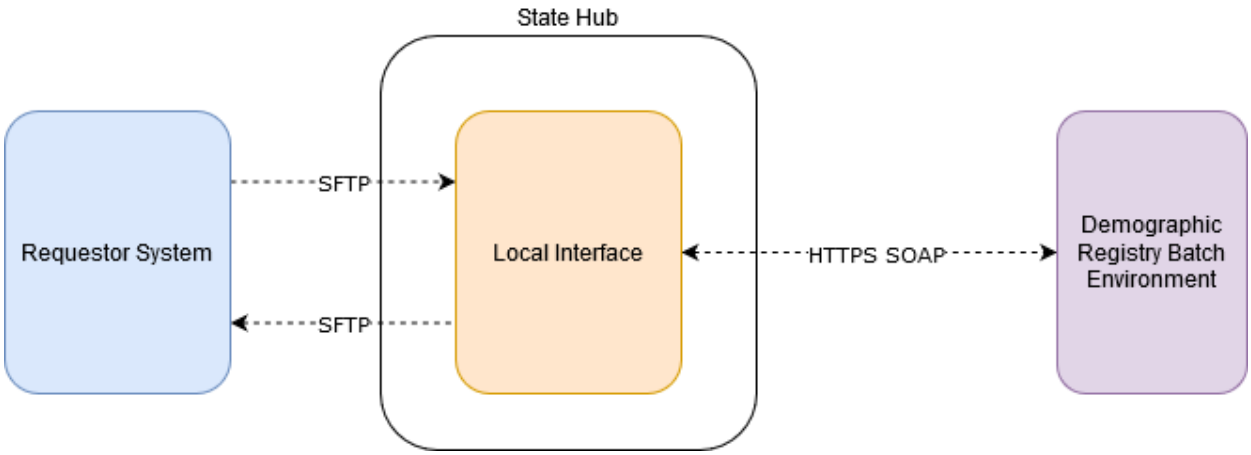
## 4.1 Interface Overview

The Local Interface residing in the State Hub shall connect the Requestor System with the Demographic Registry Batch Environment seeking to acquire beneficiaries' personal information in an Application-to-Application asynchronous behavior.

- The Requestor System shall generate a batch interface request file on a monthly basis and send it through SFTP to the Local Interface. The batch request file contains individual requests with beneficiaries' personal identifiable information that can be used to locate the beneficiary's information within the agency's system, information such as SSN, Name, and Date of Birth (DOB).
- The interface shall validate the received file and then query the individual requests securely against the Local Agency.
- Upon locating an applicant/beneficiary, the agency shall respond with the beneficiary's personal information including first name, middle name, last name, SSN, date of birth. Additionally, it shall contain the date of death if applicable.
- Once the responses have been received from the agency, the interface shall pack the response(s) in a ZIP folder and pass through to Requestor System via the State Hub SFTP Server.
- Alternatively, the interface may determine instead to return a negative acknowledgement (NACK) back to the Requestor System in the scenarios where the interface cannot process the submitted batch request file, scenarios such as when the batch request file fails validation.
- Finally, the Requestor System shall be able to retrieve and delete the response from the Local Interface via SFTP.

Figure 1 - Demographic Registry Batch Participant Information Interface Enterprise Architecture illustrates a high-level view of the interaction between the Requestor System, the Local Interface and the Demographic Registry.

*Figure 1 - Demographic Registry Batch Participant Information Interface Enterprise Architecture*




In Figure 1, the Requestor System is the entity in charge of initiating the batch request via SFTP with the Local Interface. The Demographic Registry Batch Environment is the Local Agency system that the Local Interface shall interact with to query applicants/beneficiary's information. The Local Interface is hosted in the State Hub and shall connect with the Demographic Registry Batch Environment via access to a web service to perform the requests sent by the Requestor System and deliver the responses back to the Requestor System.

## 4.2 Functional Allocation

The interaction between the Requestor System and the Local Interface is triggered when the Requestor System deposits the batch request file in the inbound folder. A mechanism shall be activated when a file is deposited. As a result of this trigger, the Local Interface shall commence the business operations to process the requests against the Demographic Registry to gather the participant information. The process is compliant with the Patient Protection and Affordable Care Act of 2010, section 1561. The schema that the requests shall contain are detailed in section 5.1.5 Message Format (or Record Layout) and Required Protocols.

The business operation to process the requests against the Demographic Registry to gather the participant information may end before processing the complete batch transaction if one of the following conditions is met:

- The interface has reached the maximum response time,

- The interface has started to receive sequential errors in the responses from the Local Agency and the quantity of those errors exceed 20% of the complete batch, or
- The interface losses connection to the Local Agency during a batch transaction and the connection is not established within twenty-four (24) hours

Shall it end by one of these conditions, the interface collects the partial responses to the batch request, along with the unprocessed requests, and sends them to the Requestor System. If there are no partial responses available, the interface shall return a NACK file.

The interface shall monitor the request files left in the Inbound folder and if a batch request file remains in the Inbound folder for more than fourteen (14) days then a business process shall take place to remove the file.

The interface shall monitor the response files left in the Outbound folder and if a response file remains in the Outbound folder for more than fourteen (14) days then a business process shall take place to remove the file.

The High-Level Design Document for this interface shall further describe this business process in detail.

## 4.3 Data Transfer

The Requestor System requests information from the Demographic Registry Batch Environment through the State Hub by placing an encrypted ZIP file containing a manifest file and the requests in XML format for the agency in the established SFTP folder in the State Hub. The interface shall validate the XML files against the National Information Exchange Model (NIEM) standards. Authentication and authorization details for the SFTP folder are discussed in section 4.5 Security and Integrity.

Table 5 - File Naming Convention for the State Hub ZIP Files describe the file naming conventions, attributes of the compressed ZIP file, and the folder name where the Requestor System shall place each request file to be processed against the Demographic Registry Batch Environment.

The **FUNC** attribute for the Demographic Registry Batch Participant Information Interface is **REGDEMBPII.**

*Table 5 - File Naming Convention for the State Hub ZIP Files*

| SFTP Folder | Filename |
|---|---|
| **Inbound folder**<br>**For Inbound (Requester to State Hub)** | SOURCEID.FUNC.DATE.TIME.ENV.IN<br>e.g., SRCMEDITI3G.REGDEMBPII.D191114.T065423325.T.IN |
| **Outbound (Response) Folder**<br>**For NACK (State Hub to Requester)** | SOURCEID.FUNC.DATE.TIME.ENV.OUT<br>e.g., SRCMEDITI3G.NAK.D191114.T065423325.T.OUT |
| **Outbound (Response) Folder**<br>**For Response (State Hub to Requester)** | SOURCEID.FUNC.DATE.TIME.ENV.OUT<br>e.g., SRCMEDITI3G.OUT.D191114.T065423325.T.OUT |

Table 6 - Description of the File Naming Standards for the State Hub SFTP File Naming Conventions defines the specific information for each attribute in the Inbound and Outbound State Hub SFTP ZIP filenames.

*Table 6 - Description of the File Naming Standards for the State Hub SFTP File Naming Conventions*

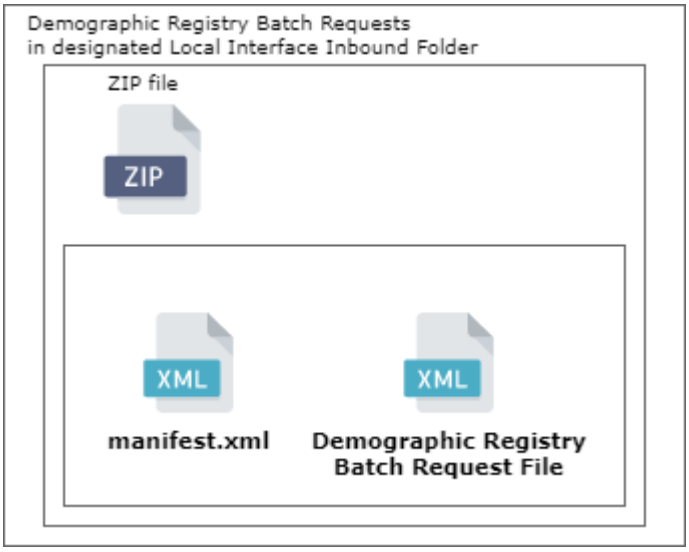
| Attribute | Description |
|---|---|
| **SourceID** | The source identification given to the Requestor to identify State Hub request match file. |
| **Func** | The specific data function that is requested to the State Hub. |
| **Date** | The date of the file submitted identified by the following format DYYMMDD |
| **Time** | The timestamp of the file submitted identified by the following format THHMMSSNNN (if milliseconds are not available, any |

| | |
|---|---|
| | three digits may be used, as long as the resultant filename is unique) |
| **Env** | The environment in which the file is being submitted (P for Production Environment (PROD), T for non-PROD) |
| **In** | File extension mandated for files Inbound to EFT<br>Note: This is only applicable for the Inbound folder. |
| **Out** | Transfer direction<br>Note: This is only applicable for the Outbound folder. |

Section 5.1.5.3 Field/Element Definition contains a description of the schema each XML file has to contain in order pass validations and be routed to the Demographic Registry Batch Environment.

Figure 2 - Inbound Demographic Registry ZIP file with batch requests illustrates a batch request in the designated Local Interface Inbound folder with one manifest and one Demographic Registry batch request file. The manifest file contains metadata information about the files within the ZIP file.

*Figure 2 - Inbound Demographic Registry ZIP file with batch requests*

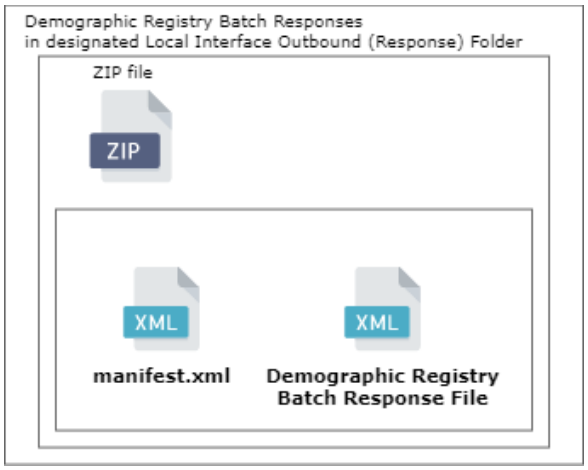


The interface shall request the information from the Demographic Registry using Simple Object Access Protocol (SOAP) through Hypertext Transfer Protocol Secure (HTTPS) with Transport Layer Security (TLS). The requests sent and the responses received from the database are processed in XML format.

After the interface has received in XML format all the responses from the Demographic Registry Batch Environment, a response file and a manifest file are created in XML format following NIEM standards, the resulting files are compressed into a ZIP file sent to the Requestor System via the established SFTP folder.

Figure 3 - Outbound Demographic Registry ZIP file with responses illustrates a batch response in the designated Local Interface Outbound folder with one manifest and one Demographic Registry batch response file.

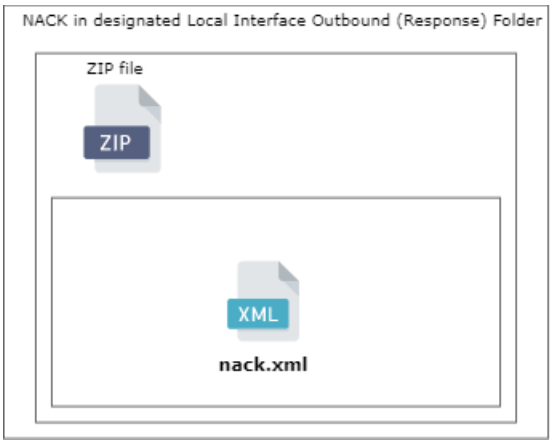
*Figure 3 - Outbound Demographic Registry ZIP file with responses*




When a validation error or a match error has occurred at the TDS, the interface shall create a NACK file containing information about the batch that generated the error and an error code to identify the type of error. The resulting files are compressed into a ZIP file and upload to the established SFTP folder for the Requestor System to download them.

Figure 4 - Outbound Demographic Registry Zip file with NACK illustrates a NACK in the designated Outbound folder with one NACK response. A NACK only contains one manifest file within the ZIP file.

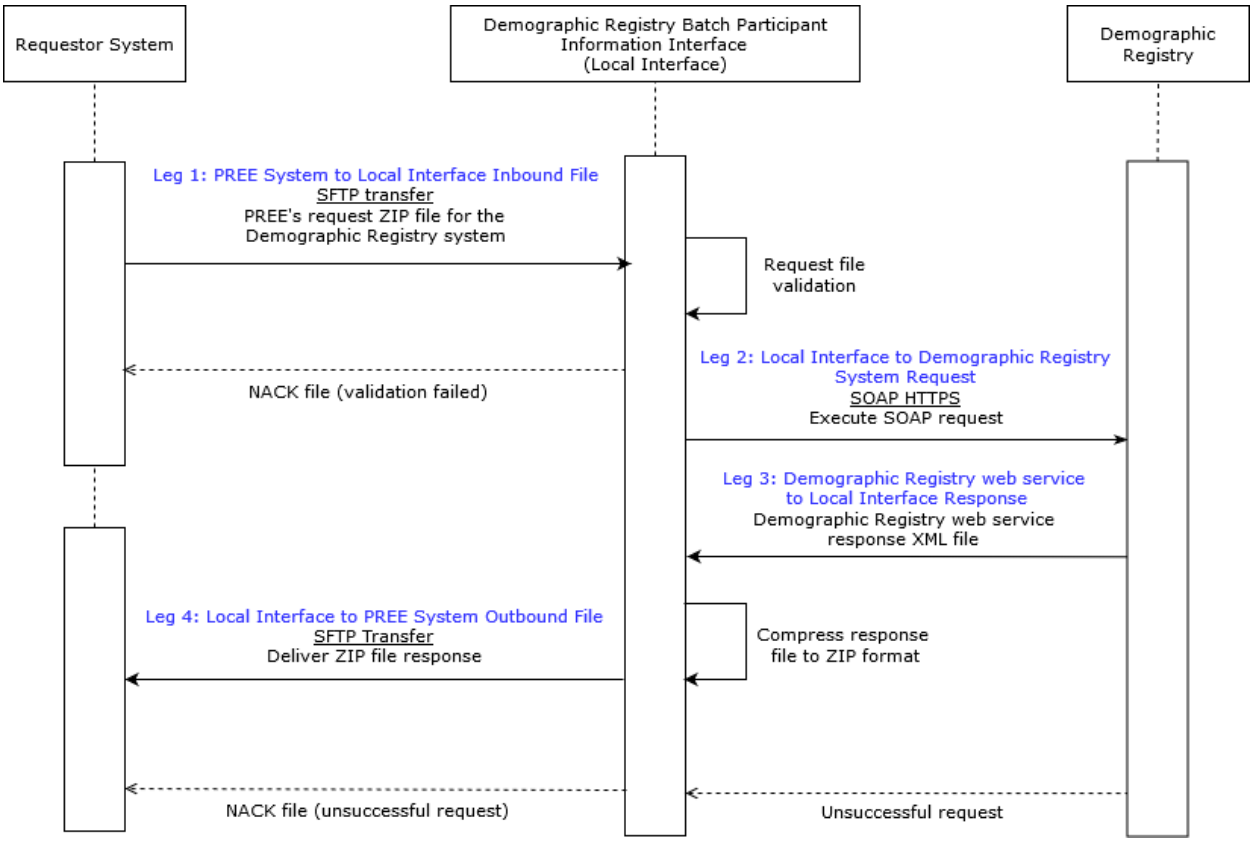
*Figure 4 - Outbound Demographic Registry Zip file with NACK*




## 4.4 Transactions

The batch request file transaction between Requestor System and the Demographic Registry Batch Environment is described below:

*Figure 5 - Transaction between MEDITI3G- Local Interface – Demographic Registry sequence*




Leg 1: Requestor System to Local Interface Inbound File

- The Demographic Registry Batch Participant Information Interface shall receive and validate an XML file following NIEM standards containing the request for the Demographic Registry Batch Environment. This transaction includes requests with personal identifiable information such as Full Name, SSN and DOB.

Leg 2: Local Interface to Demographic Registry System Request.

- The interface shall process the batch requests against the Demographic Registry Batch Environment via SOAP. This transaction shall send the requests from Leg 1 to the Demographic Registry Batch Environment.

Leg 3: Demographic Registry Batch Environment to Local Interface Response

- The interface is responsible for collecting the responses from the SOAP web service and convert the results to XML format following NIEM standards. This transaction includes the responses from the Demographic Registry Batch Environment containing personal identifiable information.

Leg 4: Local Interface to Requestor System Outbound File

- A manifest file is created for the response file. Both files are compressed in ZIP format. The final ZIP response file is delivered to the Requestor System via SFTP. This transaction shall take the responses from Leg 3 and deliver them to the Requestor System.

## 4.5 Security and Integrity

The Local Interface is to be hosted in the State Hub which provides a safe and secure environment. The State Hub allows for the requesters to exchange data with the Local Agency in a safe and secure environment using HTTPS and SFTP.

The SFTP server shall require the requester to obtain and use their own user ID and password provided by OIAT based on their internal procedures.

The SFTP server shall provide different folders (or directories) and access privileges for each requester. UNIX-standard access nodes determine the read, write, and execute levels for each owner, group, and all other users. Each requester shall have assigned folders and access to the different (or specific) interfaces depending on their needs and the access given by OIAT.

The State Hub contains auditing capabilities that provide information on the transactions from start to finish. The information captured includes information about the batch, the file; including filename, size, the user that initiated the transaction, the file origin and destination. The local interface shall audit message validations, connectivity attempts, transactions completed, and responses pulled. The interface shall be identifiable from within the audit logs of the State Hub.

The interface shall also provide warnings and errors as an extension of these auditing capabilities. These can be used as alerts or notifications and shall display information in a normalized coding structure.

The initial request upload to the State Hub SFTP shall be done using secured channels and the request shall be adequately encrypted.

The request file shall be secure while idle in the SFTP since any connection to the State Hub SFTP shall require an SSH access key. These keys shall be available to the Requestor System only. Using access keys enables the ability to revoke such keys in case of security breaches or any related incidents.

Encryption is applied by the State Hub to any file that resides in the SFTP shared directories. As part of the Local Interface, a request file shall be unencrypted, processed, and encrypted back within each step of execution.

The request file and its contents shall not be permanently persisted to any storage and shall only be accessible to processing via memory after it is forwarded to, and within, the Local Interface.

The processed request shall be split into individual SOAP requests to access the Demographic Registry's provided data. The SOAP requests shall be sent via HTTPS (using TLS 1.2) to the Demographic Registry's public web service. The SOAP request shall be encrypted while in transit to the Demographic Registry. Since data shall be obtained and returned to the State Hub using the same channel, the same security considerations shall be applied. Similarly, all security enforced during the request processing shall be applied to the data returned from the Demographic Registry to the SFTP where the Requestor System shall collect it.

The interface shall use Azure Government security rules to ensure that PII is not captured within the audit traces or payloads. The interface does employ the security mechanism to ensure that in case of a failure, no sensitive information such as PII is visible or vulnerable to external attacks. Audit processes shall report any attempts to connect to the State Hub SFTP with relevant information.

The interface shall perform source-to-destination file integrity checks during the data exchange between Requestor System and State Hub as the source and destination as part of the SFTP SSH session, as SSH provides check-sum validation.

All the technologies used to secure the entire process shall be HIPAA, HITECH 2009 and FIPS 140-2 compliant, a detailed list shall be presented in section 5.1.7 Security Requirements.

# 5 Detailed Interface Requirements

The following section provides a detailed description of the interaction between the Requestor System and the Demographic Registry through the interface in the State Hub.

## 5.1 Requirements for Demographic Registry Batch Participant Information Interface

This Demographic Registry Batch Participant Information interface shall be used to transfer a match request file from the Requestor System to the Demographic Registry and back. Full details on this end to end process, the requirements that it shall meet, any assumptions that have been made and constraints that have been identified are outlined in the below sections.

### 5.1.1 Assumptions

The following assumptions are considered for the design of this interface:

1. The participant's SSN has been pre-validated prior to a local interface match being requested for the Requestor System. Pre-validation could be performed by PRMP manually or electronically.
2. The Demographic Registry Batch Interface shall interact with the Demographic Registry through a web service that resides on site in the Demographic Registry, as agreed with the agency.
3. The Demographic Registry Batch Environment and network may need to be configured as to accept at least 100 concurrent connections.
4. The Demographic Registry shall provide authentication through SOAP for its Batch Environment.
5. The Demographic Registry Batch Environment shall develop a service method that shall be a combination of the already existing "GetBirth_B" and "GetDeath_B" service methods to satisfy need for combined results.
6. The Demographic Registry Batch Environment shall be able to handle 100 individual requests in two (2) minutes' time.
7. The Demographic Registry shall provide a single Batch Environment method for both birth and death information.

8. Requests done to the Demographic Registry Batch Environment and responses supplied shall use the recommended NIEM standard.

### 5.1.2 Constraints

The following constraints apply to the interactions between the Requestor System and the Local Interface:

- The Local Interface shall perform matches based on the following combinations:
  - SSN
  - First Name and Last Name (paternal)
  - Date of Birth (DOB)
- The Demographic Registry does not provide the means to process batch file request or offer a dedicated batch process.
- The Federal Hub implements NIEM 2.0 and has not indicated if and when they shall upgrade. Since newer versions are not backward compatible with older versions, the State Hub and the Local Interfaces shall also use NIEM 2.0.
- The XML request file within the ZIP file may not be greater than 250MB.

### 5.1.3 General Processing Steps

Table 7 - Demographic Registry Batch Participant Information Interface Processing Steps details the processing steps that the interface completes monthly to process the requests from the Requestor System to the Demographic Registry.

*Table 7 - Demographic Registry Batch Participant Information Interface Processing Steps*

| Processing Step | Description | Responsible |
|---|---|---|
| **1** | The Requestor System deposits the PGP encrypted ZIP file containing the batch requests to the Demographic Registry in the State Hub SFTP server. | MEDITI3G |
| **2** | The interface shall detect the new deposited file in the SFTP and decrypt the file using the PGP private key. | State Hub |
| **3** | The decrypted ZIP file is decompressed. | State Hub |

| | | |
|---|---|---|
| **5** | The manifest file is read and validated, as well as the Demographic Registry request file. If the interface detects an error in validation a NACK file is sent to the Requestor System. | State Hub |
| **6** | The Demographic Registry batch request file is an XML 1.0 format file. It is validated with NIEM 2.0 standards. If the file does not meet the NIEM 2.0 Standards the interface sends a NACK file to the Requestor System. | State Hub |
| **7** | The Local Interface shall check if the Local Agency System is available. If the connection to the Local Agency is not established within twenty-four (24) hours, the local interface shall stop the batch transaction and the partial results available are returned. If there are no partial results available, a NACK file is returned.<br>When this is triggered, the process that follows is detailed in Table 8 - Demographic Registry Batch Participant Information Interface processing steps when the interface processing ends before processing the complete batch transaction | Local Interface |
| **8** | The validated Demographic Registry requests are segmented into groups of a hundred (100) and sent to the local agency system. | Local Interface |
| **9** | If the Local Interface receives 20% of the complete batch or more sequential errors, or reaches the maximum response time, the batch transaction is stopped and the partial results available are returned. If there are no partial results available, a NACK file is sent.<br>When this is triggered, the process that follows is detailed in Table 8 - Demographic Registry Batch Participant Information Interface processing steps when the interface processing ends before processing the complete batch transaction | Local Interface |
| **10** | The responses are collected until all the requests has been made to the local agency system and the responses has been received. | Local Interface |
| **11** | The responses received in XML format from the Demographic Registry Batch Environment are converted to XML 1.0 format following NIEM standards. If the responses can't be parsed, a NACK shall be sent with an error code (see Table 21 - ResponseCode: Demographic Registry Batch | Local Interface |

| | | |
|---|---|---|
| | Environment ResponseCode to Demographic Registry Batch Interface). | |
| **12** | The response manifest file is generated, and the files are compressed. | State Hub |
| **13** | The compressed file is encrypted with PGP. | State Hub |
| **14** | The resulting file is placed in the State Hub SFTP Outbound folder where the file is encrypted while the file is at rest in the server. | State Hub |
| **15** | The Requestor System retrieves and deletes the response file from the Outbound SFTP folder. | MEDITI3G |

Table 8 - Demographic Registry Batch Participant Information Interface processing steps when the interface processing ends before processing the complete batch transaction details the processing steps that the interface completes when the Local Interface receives 20% or more sequential errors on the complete batch, the maximum response time has been reached or connection to the Local Agency was not established within twenty-four (24) hours.

*Table 8 - Demographic Registry Batch Participant Information Interface processing steps when the interface processing ends before processing the complete batch transaction*

| Processing Step | Description | Responsible |
|---|---|---|
| **1** | The interface receives 20% or more sequential errors on the complete batch, the maximum response time has been reached or connection to the Local Agency was not established within twenty-four (24) hours. | Local Interface |
| **2** | Verify if there have been partial responses collected during the execution. | Local Interface |
| **3** | If partial responses have been collected, create a manifest file with the partial responses and place them in the State Hub SFTP Outbound folder. | Local Interface |

| | | |
|---|---|---|
| **4** | If no partial responses have been collected, create a NACK response and place it in the State Hub SFTP Outbound folder. | Local Interface |

Table 9 - Demographic Registry Participant Information Interface processing steps to delete inbound file that is 10 days or older details the processing steps that the interface completes to delete any file that is fourteen (14) calendar days or older in the Inbound folder.

*Table 9 - Demographic Registry Participant Information Interface processing steps to delete inbound file that is 10 days or older*

| Processing Step | Description | Responsible |
|---|---|---|
| **1** | The interface polls the Inbound folder. | Local Interface |
| **2** | Verify the date that the file was placed in the folder. | Local Interface |
| **3** | Delete the file if it is ten (14) calendar days or older. | Local Interface |

Table 10 - Demographic Registry Participation Information Interface processing steps to delete outbound file that is 10 days or older details the processing steps that the interface completes to delete any file that is fourteen (14) calendar days or older in the Outbound folder.

*Table 10 - Demographic Registry Participation Information Interface processing steps to delete outbound file that is 10 days or older*

| Processing Step | Description | Responsible |
|---|---|---|
| **1** | The interface polls the Outbound folder. | Local Interface |
| **2** | Verify the date that the file was placed in the folder. | Local Interface |
| **3** | Delete the file if it is ten (14) calendar days or older. | Local Interface |

### 5.1.4 Interface Processing Time Requirements

The minimum response time of the batch file shall be within one (1) hour with a maximum response time of fourteen (14) calendar days. This maximum response time considers that the number of compressed files queued for processing shall be one (1).

Table 11 - In cases where the interface processing ends before processing the complete batch transaction, the response file shall vary as presented in this table. Cases such as exceeded the maximum response time, 20% or more sequential errors where received from the complete batch transaction, or the interface was not able to communicate with the Local Agency within twenty-four (24) hours.

*Table 11 - Scenarios in cases where the interface processing ends before processing the complete batch transaction.*

| Cause for delay | Result |
|---|---|
| **The Demographic Registry Batch Participant Information Interface has obtained a partial response from the Demographic Registry.**<br><br>Example: the interface has been able to process a certain number of requests, but the maximum response time was reached. | A response with partial responses containing the partial data it has at moment and for every un-processed individual request the response shall contain an error code. |
| **The Demographic Registry Batch interface has not received a response from the Demographic Registry** | The response shall be a NACK file. |

All the results in these cases shall be audited and presented in audit reports concerning exceeded response time.

In the case where connections are not being made to the Demographic Registry Batch Environment, the State Hub shall continue to make requests every thirty (30) minutes up to the fourteen (14) calendar days of the response time, or twenty-four (24) hours of continuous failed attempts.

### 5.1.5 Message Format (or Record Layout) and Required Protocols

The following section shall detail the format by which the Requestor System shall send participant batch requests to the Demographic Registry and the Demographic Registry shall respond to the requests sent by the Requestor System.

#### 5.1.5.1 File Layout

The Demographic Registry Batch request and response files are encrypted text files in XML format following NIEM standards. Each batch request file sent by the Requestor System shall follow the file format defined in section 5.1.5.3: Field/Element Definition.

#### 5.1.5.2 Data Assembly Characteristics

The data that is processed in the interface is in XML format following NIEM standards version 2.0. The manifest file shall include detailed information about the batch transaction being sent to the Demographic Registry. The manifest file contains information such as the quantity of files sent in the batch, the quantity of requests being made to Demographic Registry, the checksum of the files and the name of the files within the ZIP file. The maximum file size limit for Demographic Registryrequest files inside the ZIP file is 262,144,000 bytes (250 megabytes). In terms of individual requests, a single 250 MB request file can hold up to three hundred thousand (300,000) individual requests.

The request file contains one or more individual requests to the Demographic Registry with information about the participant that is going to be matched. The request includes a batch identifier, a request identifier, the name of the participant, the date of birth and the social security number. On the other hand, the response file created to the Requestor System includes one or more individual responses about the participant and the identifier for each request. Each participant's record returns a match in basic personal information such as first name, middle name, last name, social security number, date of birth, and date of death if it applies.

The NACK file contains information about any record not found and error found during the process. The NACK file shall inform of any file validation errors encountered in the process and the batch that failed the validation. If any request, attachment or manifest file in the ZIP has validation error, it shall also be specified in the file. The NACK shall also return any error found during schema validation as well as any error

captured during the processing of the match request file against the Demographic Registry.

The Demographic Registry Batch Participant Information Interface file layouts are defined in section 5.1.5.3: Field/Element Definition.

### 5.1.5.3 Field/Element Definition

The following section details the schema used between the Requestor System and the Local Interface to request participant information from the Local Agency. This section also provides details for error encountered during the transactions and how the error is reported back to the Requestor System. Section 6 provides a sample schema and sample XML for the data elements in the following section.

#### 5.1.5.3.1 Batch Service Request Manifest Data Elements, NACK Manifest ResponseCodes, and BatchCategoryCodes

The following section shall detail the manifest request schema by which the Requestor System shall send the batch request to the Local Agency, the NACK elements that shall be sent to the Requestor System if any error was encountered while validating the requests and the error codes that shall be used to inform the Requestor System of the error encountered.

##### *5.1.5.3.1.1 NACK Data Elements*

Table 12 - NACK Data Elements: State Hub to Requester NACK file defines the data elements that the State Hub NACK file returns to the Requester when an error in validation or during the process where encountered. Detailed information on the errors sent in the NACK file are found at section 5.1.5.3.1.2: NACK Manifest ResponseCodes. The following data elements define the attributes of the NACK file that the State Hub return to the Requester when an error has occurred.

Figure 6 - High Level NACK Manifest UML illustrates the elements that the NACK response shall contain in order to receive the NACK from the Local Interface. Detailed data elements are described in Table 12 - NACK Data Elements: State Hub to Requester NACK file.

*Figure 6 - High Level NACK Manifest UML*

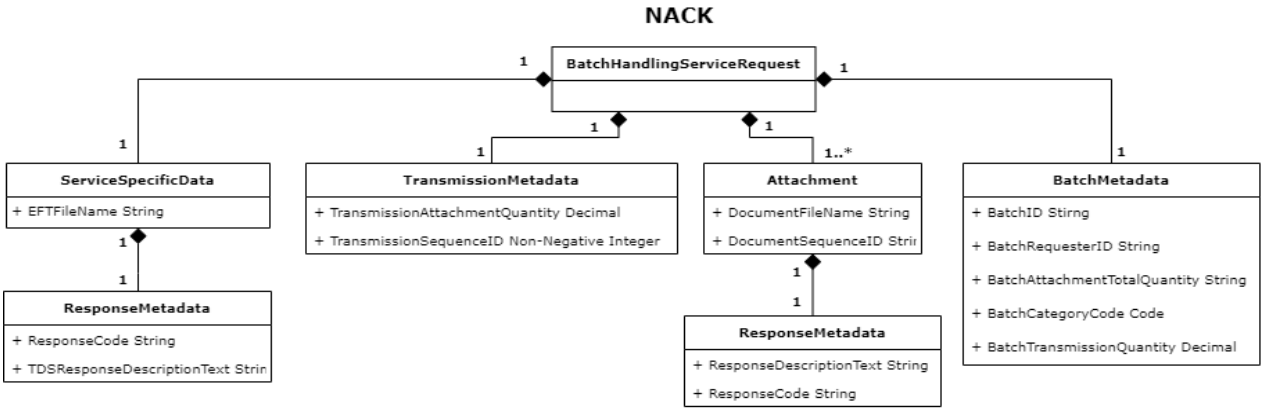



*Table 12 - NACK Data Elements: State Hub to Requester NACK file*

Table 13 - NACK
Data Elements - State

### *5.1.5.3.1.2 NACK Manifest ResponseCodes*

Table 13 – NACK Manifest Schema: State Hub to Requester NACK Manifest ResponseCodes defines the NACK Manifest responseCodes that the State Hub return to the Requester when an error in validation or during the process where encountered. The following data elements define the attributes of the NACK Manifest ResponseCodes that the State Hub return to the Requester when an error has occurred.

*Table 13 - NACK Manifest Schema: State Hub to Requester NACK Manifest ResponseCodes*

Table 14 - NACK
Manifest Schema - Sta

### *5.1.5.3.1.3 NACK Batch Category Codes*

Table 14 - NACK Manifest Schema: State Hub to Requester NACK Manifest Category Codes defines the NACK Manifest Category Codes that the State Hub returns to the

Requester when an error in validation or during the process where encountered. The following data elements define the attributes of the NACK Manifest Category Codes that the State Hub return to the Requester when an error has occurred.

*Table 14 - NACK Manifest Schema: State Hub to Requester NACK Manifest Category Codes*

Table 15 - NACK Manifest Schema - St

#### *5.1.5.3.1.4 Request Manifest Data Elements*

The Requestor System that sends batch data verification request to the Local Interface shall populate the request manifest schema to describe the files the Requester is submitting to the State Hub. The name of the request manifest file is manifest.xml.

Figure 7 - High Level Request Manifest UML illustrates the elements that the manifest request shall contain in order to submit the requests to the Local Interface. Detailed data elements are described in Table 15 - Request Manifest Schema: Requester to State Hub Inbound Batch File.

*Figure 7 - High Level Request Manifest UML*

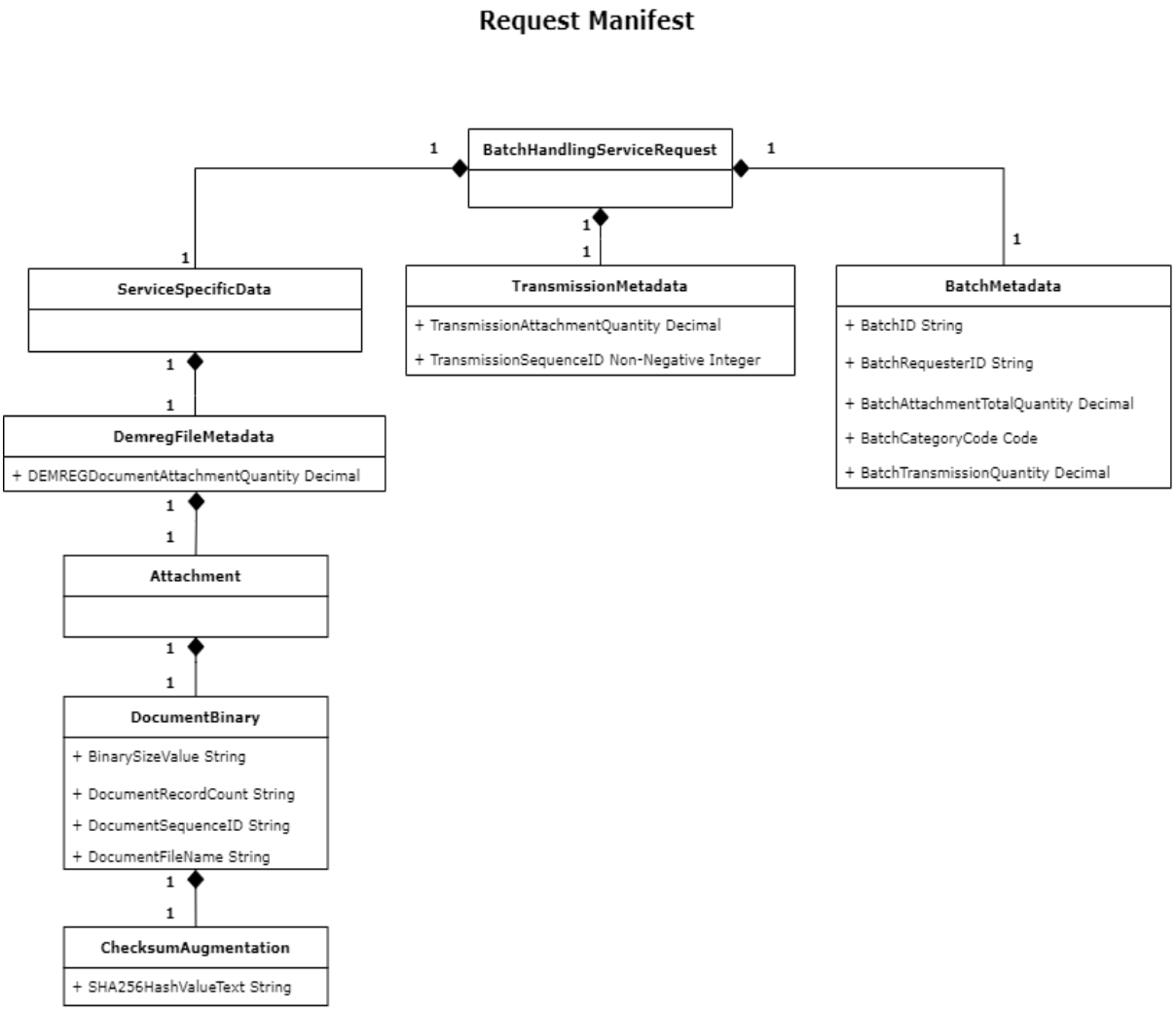



Table 15 - Request Manifest Schema: Requester to State Hub Inbound Batch File defines the data elements that the request manifest needs for a batch request to be submitted to the Local Interface. The following data elements define the attributes of the TDS-destined file the Requester need to submit to the State Hub.

*Table 15 - Request Manifest Schema: Requester to State Hub Inbound Batch File*

Table 12 - Request Manifest Schema Req

#### 5.1.5.3.2 Batch Service Response Manifest Data Elements, ResponseCodes and BatchCategoryCodes

The following section shall detail the manifest response schema by which the Local Interface shall send the response to the Requestor System and the error codes that shall be used to inform the Requestor System of the error encountered.

##### *5.1.5.3.2.1 Response Manifest Data Elements*

The State Hub populates the response manifest schema to return responses from the TDS to Requesters. The response manifest filename is manifest.xml.

Figure 8 - High Level Response Manifest UML illustrates the elements that the manifest response shall contain in order to receive the responses from the Local Interface. Detailed data elements are described in Table 16 - Response Manifest Schema: State Hub to Requester File Response.

*Figure 8 - High Level Response Manifest UML*

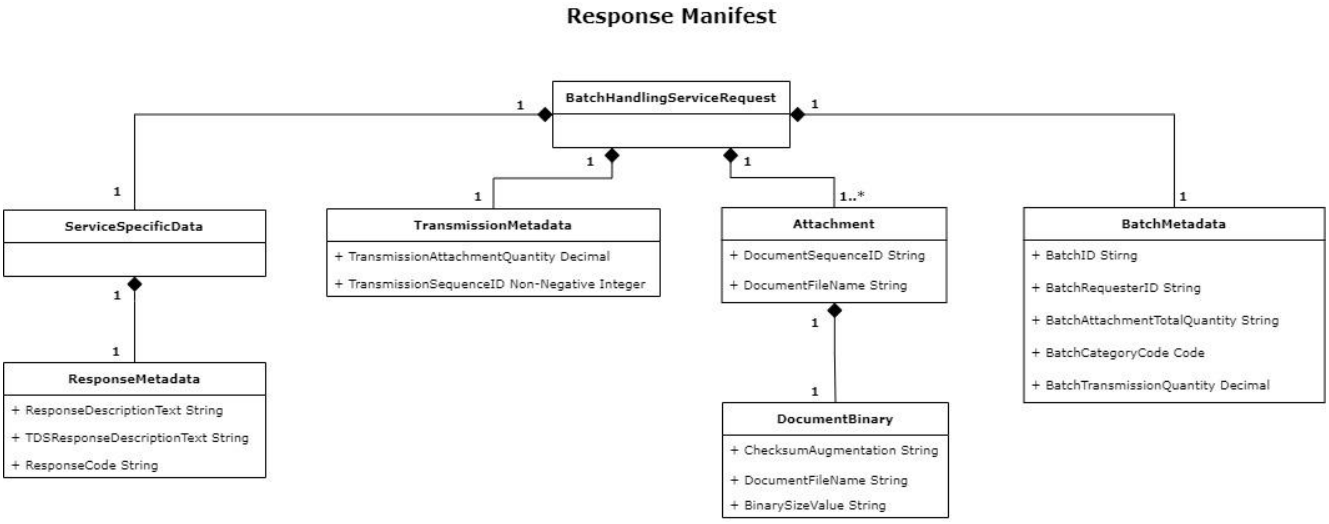



Table 16 - Response Manifest Schema: State Hub to Requester File Response defines the response data elements that the State hub needs to return to the Requester. The following data elements define the attributes of the file that the State hub return to the Requester.

*Table 16 - Response Manifest Schema: State Hub to Requester File Response*


Table 16 - Response Manifest Schema - St

#### *5.1.5.3.2.2 Response Manifest File-level ResponseCodes*

Table 17 – Manifest Schema: State Hub to Requester ResponseCodes defines Manifest File responseCodes that the State Hub return to the Requester. The following data elements define the attributes of the Manifest ResponseCodes that the State Hub return to the Requester when an error has occurred.

*Table 17 - Manifest Schema: State Hub to Requester ResponseCodes*


Table 17 - Manifest Schema - State Hub t

#### *5.1.5.3.2.3 Response Manifest BatchCategoryCodes*

Table 18 - Manifest Schema: State Hub to Requester BatchCategoryCodes defines Manifest File BatchCategoryCodes that the State Hub return to the Requester. The following data elements define the attributes of the Manifest BatchCategoryCodes that the State Hub return to the Requester when an error has occurred.

*Table 18 - Manifest Schema: State Hub to Requester BatchCategoryCodes*


Table 18 - Manifest Schema - State Hub t

### 5.1.5.3.3 Demographic Registry File Data Elements and ResponseCode

The following section details the request schema that shall be used to send the requests to the Demographic Registry and the response schema that shall be used to send the responses back to the Requestor System.

#### *5.1.5.3.3.1 Demographic Registry Request Data Elements*

Figure 9 - High Level Demographic Registry Request UML illustrates the elements that the Demographic Registry request shall contain in order to submit the requests to the Local Interface. Detailed data elements are described in Table 19 - Request Data Elements: Demographic Registry Batch Interface to Demographic Registry Batch System File Request.

*Figure 9 - High Level Demographic Registry Request UML*

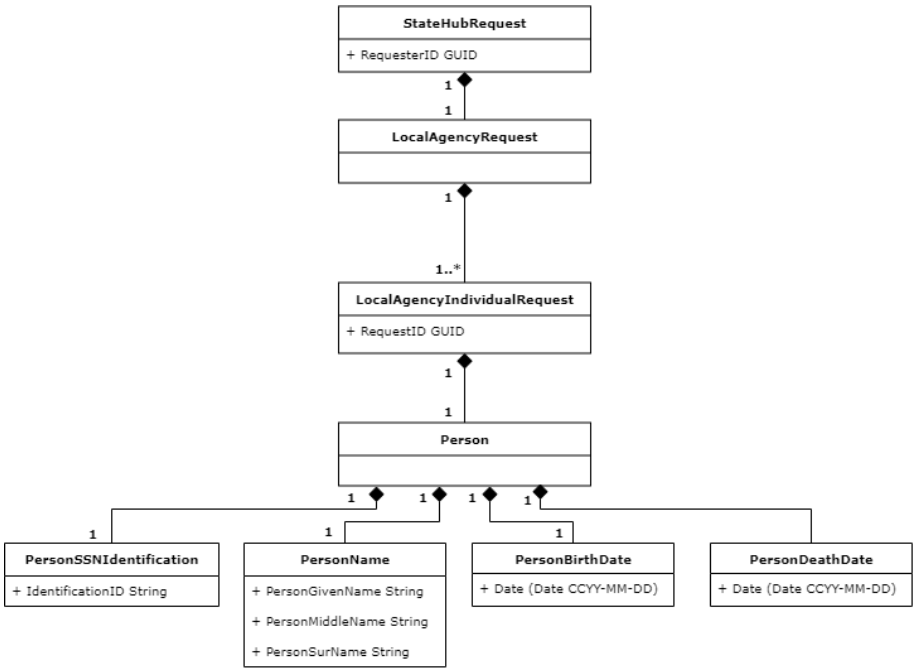



Table 19 - Request Data Elements: Demographic Registry Batch Interface to Demographic Registry Batch System File Request defines the request data elements that the Demographic Registry Batch interface needs in order to be submitted to the Demographic Registry Batch System. The following data elements define the attributes of the TDS-destined file that the Demographic Registry Batch Interface needs to be submitted to the Demographic Registry Batch System.

*Table 19 - Request Data Elements: Demographic Registry Batch Interface to Demographic Registry Batch System File Request*

Table 19 - Request Data Elements - Demo

#### *5.1.5.3.3.2 Demographic Registry Response Data Elements*

Figure 10 - High Level Demographic Registry Response UML illustrates the elements that the Demographic Registry response shall contain in order to receive the responses from the Local Interface. Detailed data elements are described in Table 20 - Response Data Elements: Demographic Registry Batch Environment to Demographic Registry Batch Interface File Response.

*Figure 10 - High Level Demographic Registry Response UML*

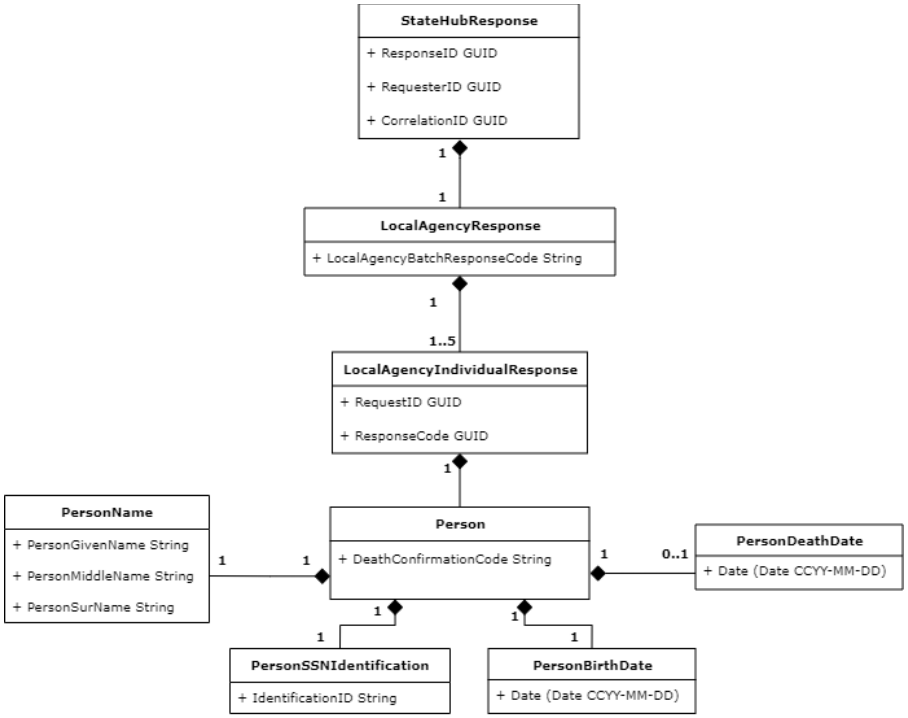



Table 20 - Response Data Elements: Demographic Registry Batch Environment to Demographic Registry Batch Interface File Response defines the Batch Environment response data elements that the Demographic Registry Batch Environment needs to return to the Demographic Registry Batch Interface and finally returned to the Requestor System.

*Table 20 - Response Data Elements: Demographic Registry Batch Environment to Demographic Registry Batch Interface File Response*

Table 20 - Response Data Elements - Demo

#### *5.1.5.3.3.3 Demographic Registry ResponseCode*

Table 21 - ResponseCode: Demographic Registry Batch Environment ResponseCode to Demographic Registry Batch Interface defines the Batch Environment responseCode that the Demographic Registry Batch System needs to return to the Demographic Registry Batch Interface.

*Table 21 - ResponseCode: Demographic Registry Batch Environment ResponseCode to Demographic Registry Batch Interface*

Table 21 - ResponseCode - Dem

Table 22 - ResponseCode/ReturnCode: Demographic Registry Batch System LocalAgencyIndividualResponse/ResponseCode defines the TDS LocalAgencyResponseCode that the Demographic Registry Batch System needs to return to the Demographic Registry Batch Participant Information Interface for each segmented batch.

*Table 22 - ResponseCode/ReturnCode: Demographic Registry Batch System LocalAgencyIndividualResponse/ResponseCode*

Table 22 - ResponseCode - Retu

### 5.1.6 Communication Methods

The following subsections outline the communication requirements for all aspects of the communication stack to which the systems participating in the interface shall conform.

Communication shall be divided three ways:

- Bi-directionally between the Requestor System and the State Hub
- Within the Local Interface
- Bi-directionally between the State Hub and Demographic Registry Batch Environment.

The Requestor System and the State Hub shall perform connections using an SSH-2 SFTP connection with RSA keys. Inbound connections shall only be able to read and write in a very specific file directory, while outbound connections shall only read files from a different file directory. Packages sent through these connections are limited to request data files, response data files, and NACK XML files. See section 4.3 Data Transfer for detailed information on the folder structure and the composition of the ZIP files.

Within the Local Interface, the components shall communicate with each other using HTTPS requests and responses using REST and exchanging XML. The Local Interface shall also communicate with the SFTP to obtain request files and deposit response files using encryption in compliance with MARS-E.

The State Hub shall manage the request to the Local Agency Batch Environment using by transmitting data through TLS 1.2 with the HTTPS protocol, to provide encryption. Both requests and responses shall be SOAP messages to use the Local Agency Batch Environment. The Local Agency Batch Environment itself shall depend on authentication within the SOAP messages to accept the messages, execute and return a response.

For exchange timing requirements see section 5.1.4: Interface Processing Time Requirements.

#### 5.1.6.1 Interface Initiation

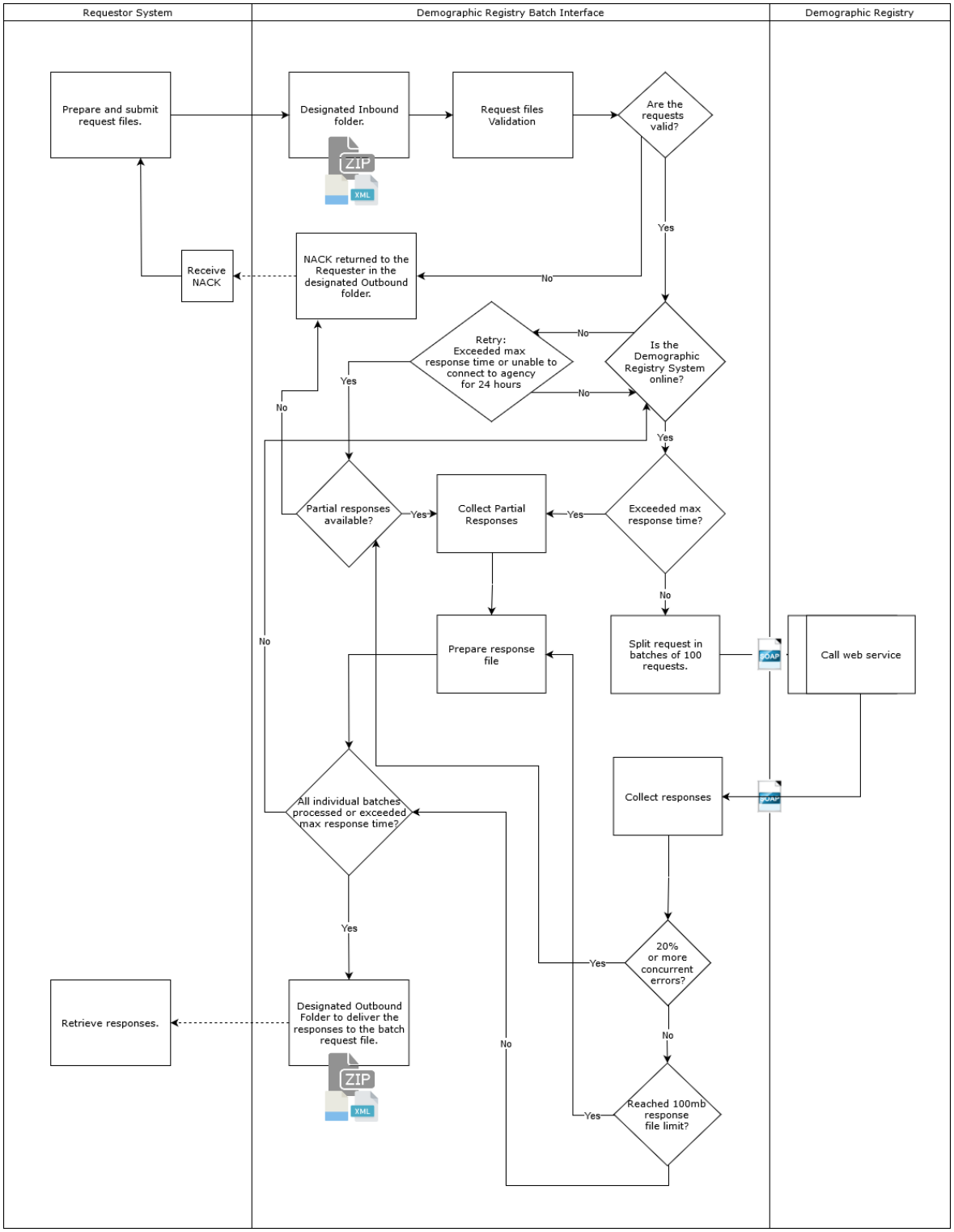
The Local Interface monitors the Inbound Folder by running a mechanism that shall be triggered when a new ZIP file has been deposited in the SFTP, the interface performs different validations to determine if the batch shall continue the workflow on the deposited files.

The connection to the SFTP server is through the SSH-2. The Requestor System shall provide the SFTP server the correct private key to be able to submit the file and initiate the interface execution.

### 5.1.6.2 Flow Control

A high-level interaction between the Requestor System-Local Interface-Demographic Registry can be seen in Figure 11 - Demographic Registry Batch Participant Information Interface Process Flow.

*Figure 11 - Demographic Registry Batch Participant Information Interface Process Flow*



The information regarding the NACK messages sent from the interface to the Requestor System can be found in sections 5.1.5.3.1.2: NACK Manifest ResponseCodes, 5.1.5.3.2.2: Response Manifest File-level ResponseCodes and 5.1.5.3.3.3: Demographic Registry ResponseCode.

### 5.1.7 Security Requirements

Any and all encryption shall be done using 256-bit AES. This shall enforce HIPAA, HITECH 2009, FIPS 140-2 requirements as well as MARS-E requirements. Encryption shall be applied to requests, responses and any data that is processed within the Local Interface and forwarded to the Demographic Registry or the Requestor System. Operations performed by the Local Interface shall go through a three (3) step process:

1. Decryption
2. Processing
3. Encryption

In other words: for every step of execution within the Local Interface, encryption shall always be managed with these three (3) steps in order to maintain encryption throughout all functionality.

Encryption is also applied to any and all data stored and at rest within the SFTP using encryption keys that shall only be available for the services being run inside the State Hub. The encryption used shall be 256-bit AES as mentioned.

Transport encryption shall be provided by TLS 1.2. This ensures that any file being transported between the Requestor System and the State Hub, as well as any request and response done via requests to Demographic Registry Batch Environment are secure while in transit. TLS 1.2 also enforces FIPS 140-2 requirements, which shall be primarily used in connections from the Requestor System to the State Hub, and from the State Hub to Demographic Registry Batch Environment.

Any idle data and/or data at rest in the State Hub SFTP shall be secured using SSH-2 and accessible only using 3072-bit RSA (SHA256) keys. Any request done to access the shared folders without valid keys and/or RSA keys on the SFTP shall be stored as an audit and reported. Keys may be disabled in the case of inappropriate access and which shall be audit logged and promptly communicated between the parties

involved. Using keys shall minimize brute force attacks and eliminates any concern in compromised credentials and leaks.

Data processed by the Local Interface shall also remain encrypted and swapped during interface functionality using HTTPS inside the virtual machines and cloud services layer of Azure Government's security model, which is its deepest layer. This data shall never be persisted in any way and shall only be accessible through memory so that it disappears from the State Hub and the Local Interface after any operation performed on it has completed. Any reference to an operation in our reporting functionality and in auditing functionality shall have no direct or indirect mention of the contents of the data that was processed when an alert or audit was performed. References to data values shall never be referenced in logging functionality which shall be limited to data fields or types only when it is necessary to reference them.

SOAP authentication for connection to Demographic Registry Batch Environment shall be handled and given by the Demographic Registry. Any exchange of data shall be required to be encrypted using TLS 1.2 to access the Batch Environment.

Access to the Azure Government environment where the State Hub and the Local Interface reside shall be limited to authorized personnel within the environment itself. These accounts shall be limited only to maintenance of the interface. In other words, authorized accounts for Azure Government shall have access to the State Hub SFTP and its idle requests and response files. This access shall be limited to viewing the list of files and deleting them. Administrators shall not have access to view the contents of the file but shall have access to delete any files stuck in transit. SFTP authorization shall have separate access and restrictions: SFTP.

The data identified as protected data in Section5.1.5.3.3.1:Demographic Registry Request Data Elements and 5.1.5.3.3.2: Demographic Registry Response Data Elements shall only be accessed by the person with the State Hub Administrator role within the State Hub. The State Hub Administrator role possess the permission to delete but not read a file, this means that in the event that an issue arises, the State Hub Administrator is the person responsible to address the issue.

# 6 XML Schemas

This section provides schemas and examples for the schemas used to communicate by the Requestor System with the Demographic Registry System through the Local Interface.

## 6.1 Request and Response Manifest Schemas

Figure 12 - Demographic Registry Request and Response Manifest Schema contains the Demographic Registry Batch Participant Information manifest XML Schemas for submitting and receiving files. The samples in each ZIP file display examples of manifest schemas. Sections 5.1.5.3.1.4 Request Manifest Data Elements and 5.1.5.3.2.1 Response Manifest Data Elements provide detailed information on these schemas.

*Figure 12 - Demographic Registry Request and Response Manifest Schema*

Demographic Registry Request and Response Manifest Schemas v1.0.zip

**Note**: The sample response manifest Schema is used for NACKS and Responses; therefore, the sample gives a depiction of all populated fields but not a true depiction of an actual scenario. See section 4.3 Data Transfer for scenario depictions.

## 6.2 Demographic Registry Request and Response Schemas

Figure 13 - Demographic Registry Request and Response File Schema contains the XML Schemas that the Requestor System shall use to communicate with the interface and the responses that shall be sent back. Additionally, this schema is used to communicate with the Demographic Registry Web Service that the Local Interface interacts with. Section 5.1.5.3.3 provides detailed information on the Demographic Registry request and response.

*Figure 13 - Demographic Registry Request and Response File Schema*

Demographic Registry Request and Response File Schema v1.0.zip

**Note**: The sample used for the Demographic Registry Request and Response gives a depiction of all populated fields but not a true depiction of an actual scenario.

# 7 Qualification Methods

This Demographic Registry Batch Participant Information ICD represents the delivery outcome of the evidence validation and interface analysis that has been gathered. Input from Puerto Rico Medicaid Program Subject Matter Experts and Demographic Registry staff was collected during Demographic Registry Batch Participant Information Interface JAD sessions and has been considered for this document as well. The qualification methods are aligned to the State Hub qualification methods, to see in detail refer to the Section 5 Release Management in the State Hub HLD.

# 8 Related Documents

*Table 23 - Related Documents*

| Document | Reference |
|---|---|
| PREE Requirements and Definitions: Local Agency Interfaces Requirements (ASUME, ADSEF, Demographic Registry, DRNA) | https://intervoicepr.sharepoint.com/:f:/r/EnE_P-APDU/Deliverables%20Library/Deliverable%2015-%20Requirements%20and%20Definitions%20Document%20for%204%20Local%20Government%20Agencies%20Delivery?d=w01cde885bbb34d2ab08b7f310cc78dd1&csf=1 |
| PREE Requirements and Definitions: State Data Verification Hub Requirements | https://intervoicepr.sharepoint.com/:w:/r/EnE_P-APDU/_layouts/15/Doc.aspx?sourcedoc=%7BF165A982-4031-4AA4-996F-B2423C7BD5A3%7D&file=PREE_StateHub_Requirements_and_Definitions_v1.0.docx&action=default&mobileredirect=true&DefaultItemOpen=1 |

# 9 Requirements Matrix

For requirement traceability purposes, the following requirements are met and mapped to this design document.

*Table 24 - Functional Requirements*

| Item # | ID | Requirement | Fit-Gap | Implementation Details |
|---|---|---|---|---|
| 1 | IR-GR-F-001 | The real-time and batch local interfaces shall be hosted in the cloud as services. | Fit | |
| 2 | IR-GR-F-003 | The batch local interfaces shall receive batch requests from the MEDITI3G System and route them to their corresponding local agency. | Fit | |
| 3 | IR-GR-F-005 | The batch local interfaces shall deliver batch responses from their corresponding local agency to the MEDITI3G System. | Fit | |
| 4 | IR-GR-F-008 | The batch local interfaces shall be able to accept one or more batch files for processing. | Fit | |
| 5 | IR-GR-F-009 | The batch local interfaces shall send NACKS when a request was not processed due to a validation error, whether NIEM validation error, checksum validation error, or otherwise. | Fit | |
| 6 | IR-GR-F-010 | The batch local interface shall return a response if the max agreed upon response time is exceeded. The response shall either be a NACK if the whole response file has yet to be processed, or a response batch file with individual responses based on batch processing completed against agency at that time. | Fit | |

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| 7 | IR-GR-F-011 | The real-time and batch local interfaces shall be uniquely identifiable from within the State Hub such that audit trails, log files, reporting services and other transactions can be quickly identified per local interface by the administrator user and auditor user when performing administrative tasks from the cloud portal. | Fit | |
| 8 | IR-GR-F-012 | The real-time and batch local interfaces shall process all PII in transit and shall not retain any PII after the processing is completed. | Fit | |
| 9 | IR-GR-F-013 | The batch local interfaces shall allow partial responses for batch transactions. | Fit | |
| 10 | IR-GR-F-015 | The real-time and batch local interfaces shall support transporting inbound and outbound data to the MEDITI3G System adhering to the NIEM standard. | Fit | |
| 11 | IR-GR-F-016 | The real-time and batch local interfaces shall send PII as search criteria to locate the person/participant at the local agency. | Fit | |
| 12 | IR-GR-F-017 | The real-time and batch local interfaces shall be capable of receiving a response from their respective local agency with the participant information pre-defined data elements. | Fit | |
| 13 | IR-GR-F-018 | The batch local interface shall allow MEDITI3G System to submit a batch request file for querying the local agency System for Participant(s) Information, to be returned within one or more response files. | Fit | |
| 14 | IR-GR-F-020 | The batch local interface request file shall contain a batch set of individual | Fit | |

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| | | participant requests, each request containing participants' PII search criteria. | | |
| 15 | IR-AR-F-002 | The batch local interfaces shall log events resulting from requests received from the MEDITI3G System through the State Hub and the response from their corresponding local agency. At a minimum, events that shall be logged are:<br>1. Batch file received for batch transactions.<br>2. Size of the batch ZIP file in KB, MB, or GB<br>3. Size of the batch file's XML document in KB, MB, or GB<br>4. File validation results.<br>a. Requester ID captured<br>5. Request transformation results (optional).<br>6. Result of connectivity attempt to the local agency.<br>a. Connection was established to the local agency (timestamp).<br>b. Connection timeout between interface and local agency.<br>7. Agency query results<br>a. Error code<br>8. Response transformation results (optional)<br>9. Transaction completed after transmitting data to the local agency.<br>a. Correlation ID captured.<br>10. File placed for pick-up.<br>11. File picked-up.<br>12. File auto-removed. | Fit | |
| 16 | IR-AR-F-003 | The real-time and batch local interfaces shall log error codes accompanied by an unvarying, standard description that defines what the error code means when an exception occurs. | Fit | |
| 17 | IR-AR-F-004 | The real-time and batch local interfaces shall relay audit trails related to warnings and errors to the | Fit | |

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| | | State Hub using a normalized coding structure so that they are easily identifiable for auditing and troubleshooting purposes. | | |
| 18 | IR-AR-F-005 | The real-time and batch local interfaces shall not store PII in audit trails. | Fit | |
| 19 | IR-AR-F-006 | The real-time and batch local interfaces shall capture non-personal identifying invalid data in the communication (request and response) to help with troubleshooting. | Fit | |
| 20 | IR-SR-F-001 | The real-time and batch local interfaces shall ensure that if a failure occurs, no sensitive information, such as PII is vulnerable to external attacks via interface responses or captured audit trail. | Fit | |
| 21 | IR-SR-F-002 | The real-time and batch local interfaces shall keep data encrypted during transit as originated from the MEDITI3G System and the Local Agency. | Fit | |
| 22 | IR-SR-F-003 | The real-time and batch local interfaces shall establish a secure connection with the MEDITI3G System and the Local Agency. | Fit | |
| 23 | IR-SR-F-004 | The batch local interfaces shall keep data encrypted at rest while the transaction is being processed. | Fit | |
| 24 | IR-SR-F-005 | The batch local interfaces shall permanently remove all batch files, after the request has been processed and the response has been sent to the MEDITI3G System. | Fit | |
| 25 | IR-SR-F-006 | The real-time and batch local interfaces shall comply with the security guidelines and recommendations established in the | Fit | |

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| | | Patient Protection and Affordable Care Act of 2010, Section 1561. | | |
| 26 | IR-SR-F-007 | The real-time and batch local interfaces shall comply with the security requirements established by the HITECH 2009. | Fit | |
| 27 | IR-SR-F-008 | The real-time and batch local interfaces shall restrict access to appropriately authenticated systems (for example, MEDITI3G System and Local Agencies' Systems). | Fit | |
| 28 | IR-SR-F-009 | The real-time and batch local interfaces shall restrict access to appropriately authenticated users (for example, administrator and auditor). | Fit | |
| 29 | IR-SR-F-010 | The real-time and batch local interfaces shall allow an administrator, without granting read access, to delete an in-transit file (stuck in-transit). | Fit | |
| 30 | IR-SR-F-011 | The batch local interfaces shall securely purge (delete) any file that reaches or surpasses the predefined time for processing. | Fit | |
| 31 | IR-GR-F-DM-001 | Demographic Registry shall provide the following data elements in requirement "IR-GR-NF-DM-001" upon request, whether by real-time or batch. | Fit | |
| 32 | IR-GR-F-DM-002 | The Demographic Registry real-time and batch local interfaces shall support the ability to retry a transaction, without manual intervention, after the local agency becomes unavailable mid-transaction. | Fit | |
| 33 | IR-GR-F-DM-003 | The Demographic Registry real-time and batch local interfaces shall be capable of returning, whenever | Gap | The Demographic Registry does not provide the |

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| | | available, a response with the replication date of the data. | | replication date of the data. |
| 34 | IR-GR-F-DM-004 | The Demographic Registry real-time and batch local interfaces shall capture metric of whether the local agency endpoint is online or unavailable at the time of its use, up to including any retry attempts. | Fit | |

*Table 25 - Non-Functional Requirements*

| Item # | ID | Requirement | Fit-Gap | Implementation Details |
|---|---|---|---|---|
| 1 | IR-GR-NF-004 | The batch local interfaces shall process batch uncompressed XML files that do not exceed two hundred and fifty (250) Megabytes (MB). | Fit | |
| 2 | IR-GR-NF-005 | The batch local interfaces shall be able to process up to one (1) request file at a time. | Fit | |
| 3 | IR-GR-NF-006 | The batch local interface shall expose an SFTP directory so that MEDITI3G System may submit batch requests files for batch querying. | Fit | |
| 4 | IR-GR-NF-007 | The batch local interface shall expose an SFTP directory so that MEDITI3G System may pick up any batch response files destined for MEDITI3G System. | Fit | |
| 5 | IR-GR-NF-008 | The batch local interfaces shall permanently remove in-transit files that has not been used within ten (10) calendar days. | Fit | |
| 6 | IR-GR-NF-009 | The real-time and batch local interfaces shall comply with HIPAA and MARS-E regulations to guarantee data encryption, protection, portability, and integrity. | Fit | |

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| 7 | IR-GR-NF-012 | The batch interfaces shall support Application-to-Application asynchronous behavior for batch requests. | Fit | |
| 8 | IR-LR-NF-001 | The real-time and batch local interfaces shall generate alerts and notifications through the State Hub using monitoring capabilities. | Fit | |
| 9 | IR-MR-NF-001 | The real-time and batch local interfaces shall capture metrics on the availability of the service provider (local agency). The metric shall compliment the State Hub's service provide monitoring capabilities. | Fit | |
| 10 | IR-SR-NF-001 | The real-time and batch local interfaces that support Secure Socket Layer (SSL) connections shall be supported by public key/private key encryption SSL certificates capable of 256-bit encryption or stronger. | Fit | |
| 11 | IR-SR-NF-002 | The security configurations and conditions that the real-time and batch local interfaces are required to implement in a production environment shall be the same configurations and conditions implemented in all development, testing, integration, and acceptance test environments to guarantee compliance with the security measures in the MARS-E for protecting PII. | Fit | |
| 12 | IR-SR-NF-003 | The real-time and batch local interfaces development and development tests shall not use real data for development or testing environments. | Fit | |
| 13 | IR-SR-NF-004 | The batch local interfaces shall perform source to destination file integrity checks for exchange of data to ensure no corrupted data reaches | Fit | |

  

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| | | to or is extracted from the local agency. | | |
| 14 | IR-GR-NF-DM-001 | The real-time and batch local interfaces shall be capable of receiving a response from Demographic Registry with the following participant information data elements:<br>a. SSN<br>b. Birth and Death Details (Originally, Death Confirmation) | Fit | |
| 15 | IR-GR-NF-DM-002 | The Demographic Registry batch local interfaces shall have a maximum response time of five (5) days. | Fit | |
| 16 | IR-GR-NF-DM-003 | In case of connectivity issues between the batch local interface and the local agency, the local interface shall retry establishing connection and processing the transaction every half-hour (30 minutes) for up to the max response time or a consecutive 24-hour window of not communicating. Each attempt of reconnecting shall be notified to the State Hub. | Fit | |

# 10 Issue Register

This section shall capture the identified issues that caused a change to the Local Interface.

*Table 26 - Issue Register*

| Issue # | Issue | Resolution | Resolution Date |
|---|---|---|---|
| None identified at this moment | | | |

# 11 Appendix A – Demographic Registry Connectivity and Maintenance Arrangement

The following section provides a summary of the plan that Wovenware has been able to arrange with the Demographic Registry for this Local Interface:

1. There shall be a signed Memorandum of Understanding (MOU) agreement in place with the Demographic Registry to allow the sharing of information.
2. The Demographic Registry Batch Interface shall interact with the Demographic Registry through a SOAP web service that resides in Demographic Registry's side, as agreed with the agency.
3. The Demographic Registry network may need to be configured as to accept a large amount of concurrent connections.
4. The Demographic Registry established that batch requests shall be executed in a window that starts at 7:00 pm and ends at 12:00 am next morning.
5. The Demographic Registry shall promptly notify PRMP key personnel of any maintenance window not previously scheduled or agreed upon.
6. The Demographic Registry Batch Environment shall support up to a hundred (100) individual requests on a single call.
7. The specification of the web service is located in section 12 Appendix B – Demographic Registry Web Service .

  

# 12 Appendix B – Demographic Registry Web Service Specification Document

*Figure 14 – Demographic Registry Web Service Specification Document*

RegDem Web
Services - Technical D