
90FQ0006
Oklahoma Interoperability Grant Project

Oklahoma Interoperability Grant
NIEM Roadmap

Revision: 1.0
Date: July 30, 2013



Prepared for:
Office of Grants Management
Administration for Children and Families (ACF)
US Department of Health and Human Services
Washington, DC

Prepared by:
Oklahoma Office of Management and Enterprise Services –
Information Services Division serving the
Oklahoma Department of Human Services (OMES-ISD@OKDHS)
Oklahoma City, Oklahoma

Approval Signatures

Signature on File in Project Files

Sumita Pokharel, Project Team Lead

Signature on File in Project Files

James Conway, Project Sponsor

Document Revision Record

Date	Revision	POC	Summary of Changes
07.30.2013	Rev -1.0	Sumita Pokharel	Initial release of document.

The current version of this document is stored electronically within the OKDHS Source Control System.

Table of Contents

1	EXECUTIVE SUMMARY	1
1.1	Purpose	1
1.2	Background/Overview	1
1.2.1	NIEM Framework	1
1.2.2	Information Exchange Package Documentation (IEPDs).....	3
1.2.3	NIEM Domain	5
1.2.4	Federal Health Information Model (FHIM).....	6
1.2.5	NIEM-UML	8
1.2.6	NIEM Human Services Domain	11
1.2.6.1	Leveraging NIEM for Human Services	11
1.2.6.2	NIEM Engagement Process (NEP)	12
1.2.7	Exploration Questions.....	14
1.2.8	Goals/Objectives.....	16
1.2.8.1	Improve service delivery for clients	16
1.2.8.2	Reduce errors and improve program integrity	17
1.2.8.3	Improve administrative efficiency	18
1.3	Current System Overview.....	18
1.4	Scope/Requirements	20
1.5	Approach and Recommendations	20
1.5.1	Recommendations.....	21
1.5.1.1	Core Data.....	21
1.5.1.2	Privacy and Security	21
1.5.1.3	Governance.....	21
1.5.1.4	Tools to Manage NIEM Implementation	22
1.6	Assumptions and Constraints	23
1.7	Benefit to Other States	25
1.8	Options Enterprise Architecture and/or Modules	25
1.9	End Result.....	25
1.10	Breadth.....	25
1.11	Human Services Program and Initiatives.....	26
1.12	Information Technology Initiatives	26
1.13	Health Intersection.....	27
1.14	Data Governance	27
1.14.1	Overview.....	28
1.14.2	Sponsor	28
1.14.3	Data Stewardship	28
1.14.4	Policies and Procedures (Data Access, Data Reusability, Data Integrity, Data Deduplication).....	29
2	SYSTEM/INTERFACE TO-BE OVERVIEW	29
2.1	Official NIEM Schemas.....	29
2.2	Health and Human Services Domain Exchange Model.....	29
2.3	Agency Specific Schemas	30
2.4	IEPD Specific Schemas.....	30

2.5	Citizenship Verification Process	31
2.5.1	Executive Summary	31
2.5.2	Business Processes.....	32
2.5.3	Use Cases	32
2.5.4	Requirements	32
2.5.5	Web Services.....	32
2.5.5.1	Data Requirements to Citizenship Verification Webservice (Input)	33
2.5.5.2	Data Requirements (Output)	34
2.5.6	Information Exchange.....	34
2.5.7	Exchange Content Model.....	35
2.5.8	Mapping Document.....	35
2.5.9	XML Schemas	35
2.5.10	Functional Allocation.....	35
2.5.11	Data Transfer	36
2.5.12	Data Definitions	36
2.5.13	Security and Integrity	37
2.6	OKDHSLive Interoperability.....	37
2.6.1	Executive Summary	37
2.6.2	Business Processes.....	39
2.6.3	Use Cases	39
2.6.4	Requirements	39
2.6.5	Web Services.....	40
2.6.6	Information Exchange.....	40
2.6.7	Exchange Content Model.....	41
2.6.8	Mapping Document.....	41
2.6.9	XML Schemas	41
2.6.10	Functional Allocation.....	41
2.6.11	Data Transfer	41
2.6.12	Data Definitions	42
2.6.13	Security and Integrity	51
2.7	OHCA online enrollment for SoonerCare Medicaid Eligibility and OCSS referrals	52
2.7.1	Executive Summary	52
2.7.2	Requirements	53
3	ADDITIONAL INFORMATION	54
3.1	Referenced Documents.....	54
4	ACRONYMS	55

List of Tables

Table 1: Outcomes.....	1
Table 2: Exploration Questions	14
Table 3: Goals/Objectives	16
Table 4: Systems and Owners	20
Table 5: Data Elements of Citizenship Verification Webservice	37
Table 6: Data Definitions for OKDHSLive Interoperability	42

List of Figures

Figure 1: NIEM Framework	2
Figure 2: How NIEM Works	2
Figure 3: Timeline for NIEM v3.0.....	3
Figure 4: IEPD Lifecycle.....	4
Figure 5: NIEM Domain and IEPD Lifecycle.....	5
Figure 6: IEPD Artifacts and Tools	6
Figure 7: FHIM Overview Diagram.....	7
Figure 8: FHIM Enrollment, Eligibility and Coordination of Benefits Model.....	8
Figure 9: Timeline of NIEM-UML	8
Figure 10: Components of the NIEM-UML Specification	9
Figure 11: Future NIEM Governance	11
Figure 12: NIEM Engagement Process Method and Tools	13
Figure 13: High Level NIEM Adoption Plan	14
Figure 14: AS-IS System Overview – Data Exchanges.....	19
Figure 15: IEPD Inheritance Schema	30
Figure 16: Citizenship Verification Process	33
Figure 17: Details of Citizenship Verification Webservice with OSDH.....	34
Figure 18: Draft UML Diagram	35
Figure 19: Sequence Diagram of Citizenship Verification Webservice.....	36
Figure 20: Sequence Diagram of OKDHSLive Interoperability Webservice	42

List of Appendices

A-1-1: List of AS-IS Interfaces.....	(on Zip File) 5642
B-1-2: OHCA Agreement.....	(on Zip File) 56
B-1-3: OSDH Agreement.....	(on Zip File) 56
B-1-4: Citizenship Verification IEPD Definition	57
B-1-5: OKDHSLive Interoperability IEPD Definition	66
C-1-1: NIEM Mapping Document – Citizenship.....	(on Zip File) 42
C-1-3: OKDHSLive Web Service for Outside Agencies Diagram	(on Zip File) 56
C-1-4: NIEM Mapping Document – OKDHSLive Interoperability.....	(on Zip File) 5642

1 EXECUTIVE SUMMARY

1.1 Purpose

Develop a roadmap for a fully integrated, reusable, less duplicated (whenever possible) data exchange for reports and all services exchanged between Oklahoma Department of Human Services (OKDHS), Oklahoma Health Care Authority (OHCA), Oklahoma State Department of Health (OSDH) and other initiatives. This roadmap includes the data these systems will share in inter-agency collaboration by using the National Information Exchange Model (NIEM) for a consistent and repeatable exchange of data between systems and agencies through the integration of information via an enterprise data warehouse and web services.

This project will provide opportunities for inter-agency collaboration and allow multiple state agencies to leverage Service Oriented Architecture (SOA) services and capabilities, in support of the state's effort to meet the timelines of the Affordable Care Act (ACA) for citizen enrollment. The proposed interoperability plan provides the maximum potential for mutual benefit and reusability by health and human services organizations in Oklahoma, enabled through the Project Outcomes listed in **Table 1 - Outcomes**.

Table 1: Outcomes

Index	Project Outcome
O1	Develop models using the NIEM for a consistent and repeatable exchange of data.
O2	Provide a roadmap that can benefit other states.
O3	Provide seamless integration of systems that serve the consumer in pursuit of health coverage (e.g., Medicaid) and human services programs.
O4	Help agencies enhance services across key mission and function areas.
O5	Reduce development and maintenance costs.

This paper is an analysis of NIEM framework and identifies the steps that need to be performed in order to implement a NIEM compliant exchange. This analysis has selected a few scenarios within the Oklahoma environment to show how it can be customized.

1.2 Background/Overview

1.2.1 NIEM Framework

NIEM connects communities of people who share a common need to exchange information in order to advance their missions, and provides a foundation for seamless information exchange between federal, state, local, and tribal agencies. NIEM is characterized by an active user community as well as a technical and support framework as shown in **Figure 1 - NIEM Framework**.

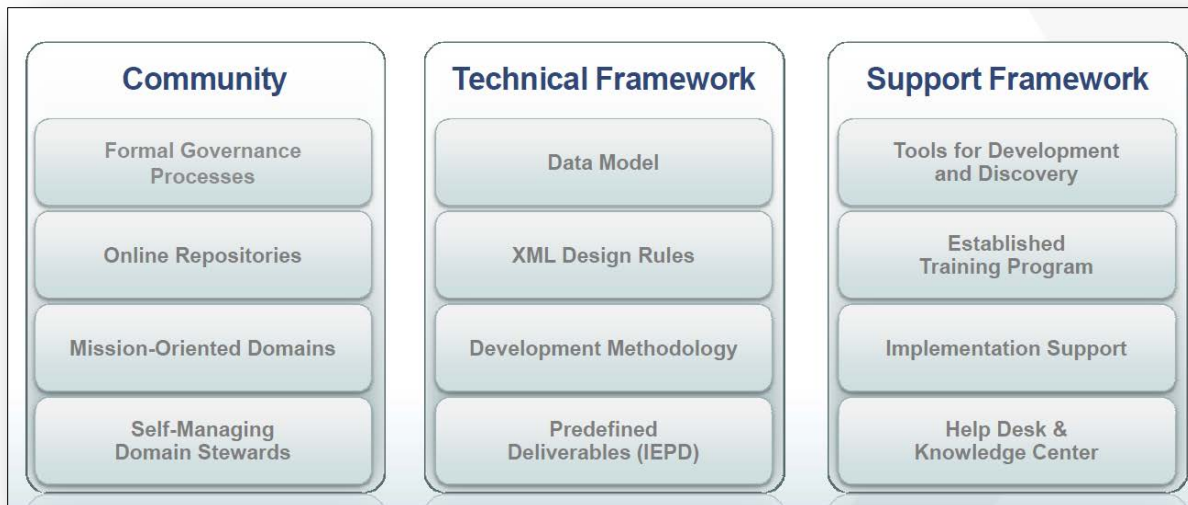


Figure 1: NIEM Framework

Reusability and standardization can be achieved using NIEM to exchange information, as shown in **Figure 2 - How NIEM Works**.

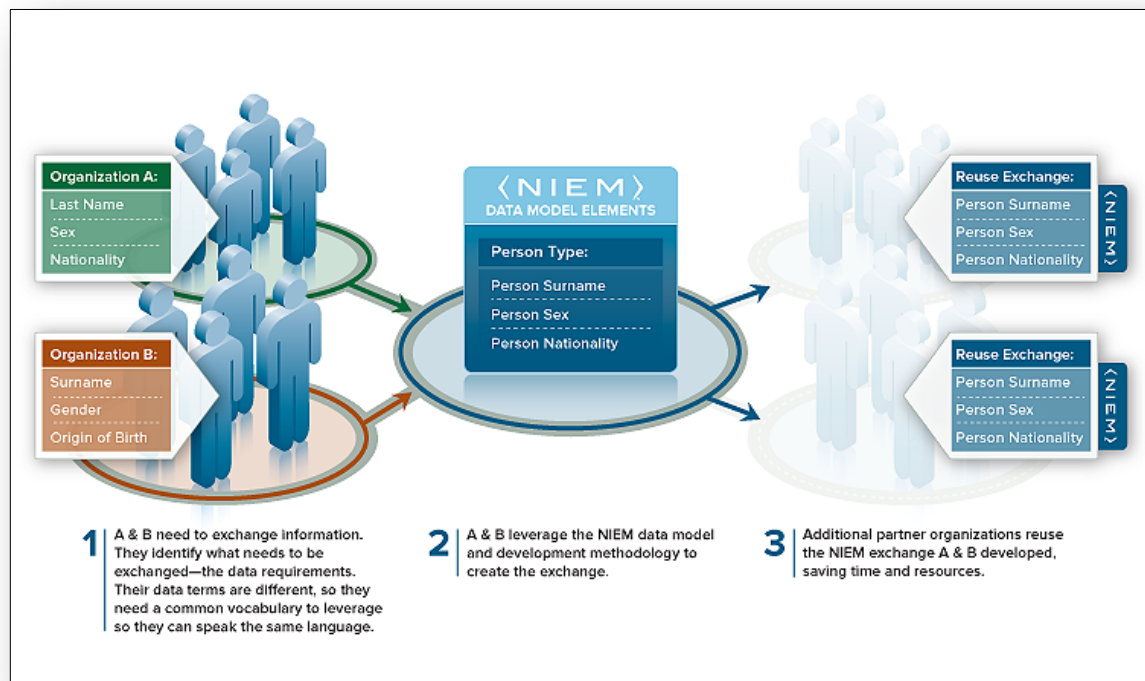


Figure 2: How NIEM Works

NIEM defines the format and structure of data in transit. Exchange partners decide how to store and process the NIEM-conformant data being exchanged.

Currently NIEM is in version 2.1. The timeline for v3.0 is given below in **Figure 3 - Timeline for NIEM v3.0**. NIEM v3.0 alpha2 has already been released.

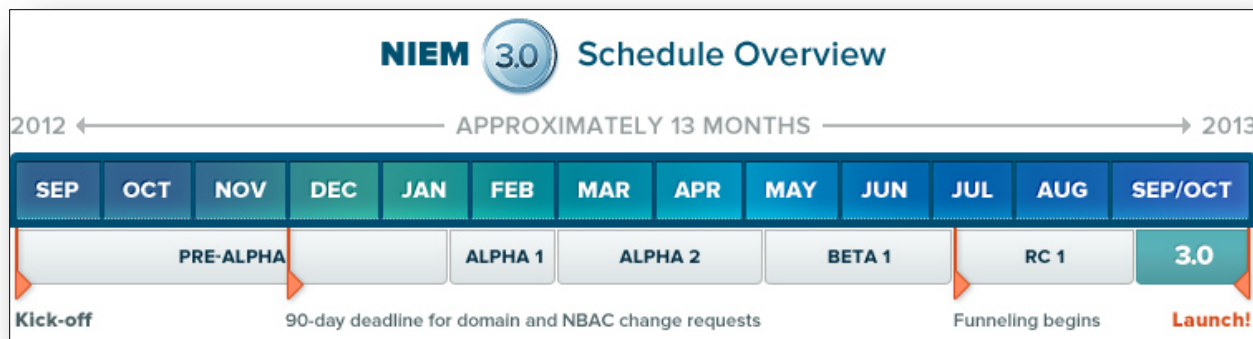


Figure 3: Timeline for NIEM v3.0

Release of version 3.0 is expected in Sept/Oct of this year.

1.2.2 Information Exchange Package Documentation (IEPDs)

An IEPD is a collection of artifacts that describe the construction and content of an information exchange. IEPDs are:

- Developed to provide the business, functional, and technical details of the information exchange through pre-defined artifacts.
- Created with a core set of artifacts in a prescribed format and organizational structure to allow for consistency.
- Designed to be shared and reused in the development of new information exchanges through publication in IEPD repositories.

The NIEM Domain and Information Exchange Package Documentation (IEPD) Lifecycle consists of several domains including:

- NIEM Core
- Justice
- Emergency Management
- Immigration
- Children, Youth and Family Services
- Maritime
- International Trade, etc.

Note: a Health and Human Services domain does not currently exist.

There may be one or more IEPDs for one information exchange. To create a NIEM conformant IEPD, the IEPD must conform to the following formats:

1. **NIEM Naming and Design Rules (NDR)** – The NDR specifies rules to standardize schema development and provides a blueprint for NIEM-conformance. It also provides rules for NIEM reference schemas, NIEM eXtensible Markup Language (XML) elements, and other NIEM XML documents including sample XML instances. NIEM, through NDR, aligns to two existing industry standards: World Wide Web Consortium (W3C) and International Organization for Standardization (ISO).
2. **IEPD Specification** - Similar to any Systems Development Lifecycle, IEPD creation goes through a complete lifecycle. The IEPD lifecycle, as shown in **Figure 4: IEPD Lifecycle**, consists of the following:
 - **Scenario Planning:** Includes planning of the project, establishing the process, and identifying exchange business requirements.
 - **Analyze Requirements:** Includes the elaboration and documentation of the business context and data requirements.
 - **Map and Model:** Includes association of local objects with types and elements in NIEM. This process is called mapping and exchange content model to NIEM.
 - **Build and Validate:** Includes creation of a set of exchange-specific, NIEM conformant XML schemas that implement the data model created for exchange.
 - **Assemble and Document:** Includes preparation and packaging of all related files for this IEPD into a single self-contained, self-documented, portable archive file.
 - **Publish and Implement:** Includes publishing IEPD for search, discovery, and reuse.

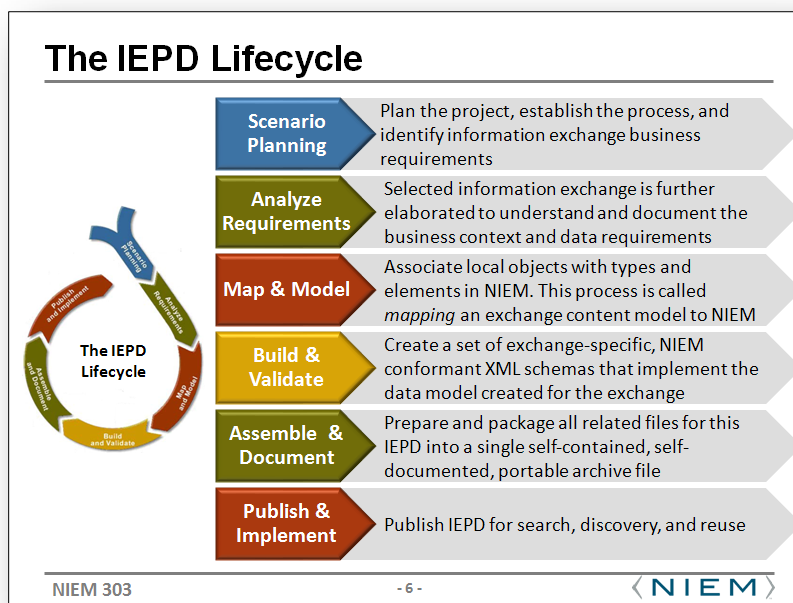


Figure 4: IEPD Lifecycle

IEPDs have a defined development methodology.

1.2.3 NIEM Domain

As shown in **Figure 5 - NIEM Domain**, the NIEM Core consists of data elements that are commonly understood across all domains. NIEM Domains include mission specific data that is managed through independent stewards. Future Domains, such as Health and Family Services, are added to NIEM as necessary based on an established need.

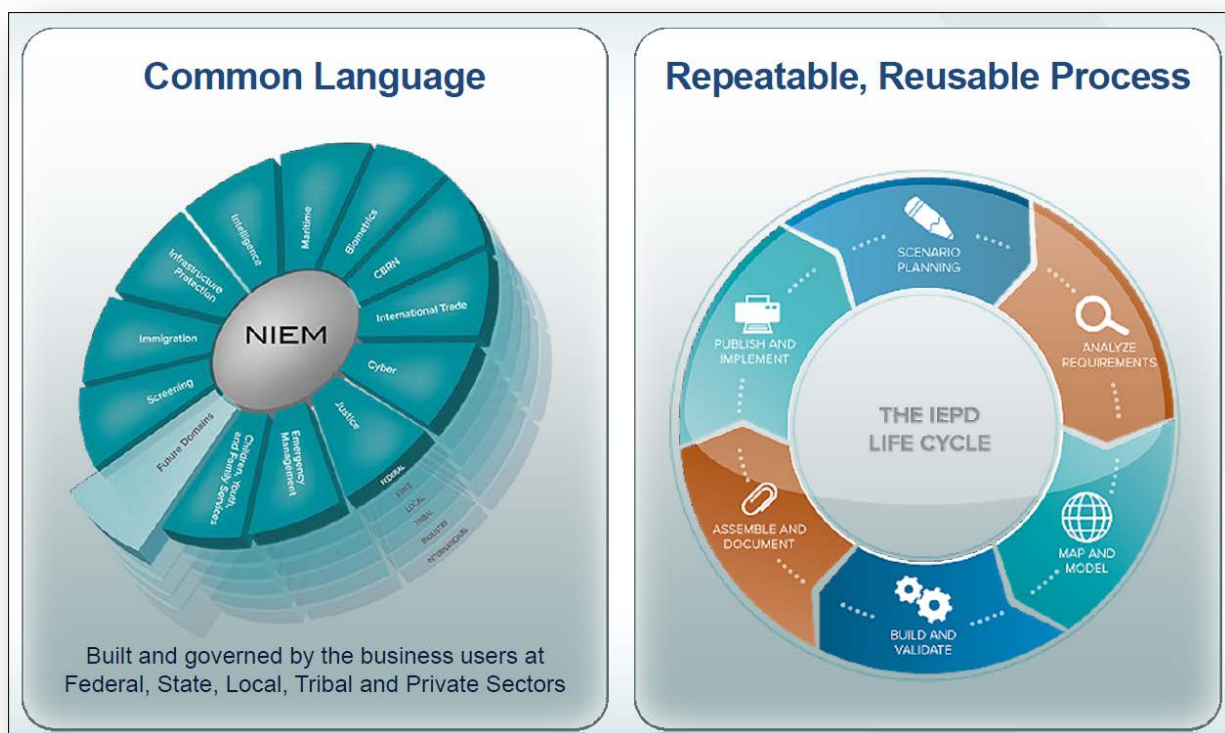


Figure 5: NIEM Domain and IEPD Lifecycle

The NIEM Technical Architecture (shown on left of Figure 5) consists of the NIEM Core, NIEM Domains and Future Domains. IEPDs have a defined development methodology (shown on right of Figure 5). Best practices for most organizations include many of the optional artifacts as shown in **Figure 6 - IEPD Artifacts and Tools**. Common tools used to manage a NIEM implementation include NIEM Wayfarer 2.1 that provides the ability to search the NIEM data model during the mapping process.

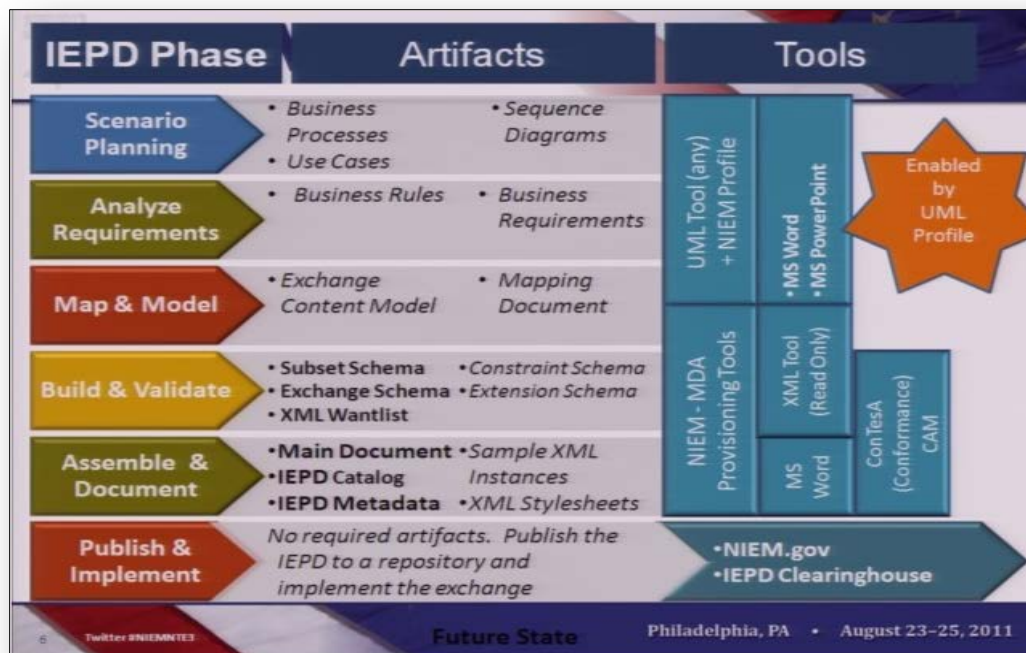


Figure 6: IEPD Artifacts and Tools

IEPDs contain both required and recommended artifacts.

1.2.4 Federal Health Information Model (FHIM)

The FHIM is a project under a larger program called Federal Health Interoperability Modeling and Standards (FHIMS – refer to fhmis.org), which is an initiative of the Federal Health Architecture (FHA). The FHIMS program is intended to coordinate the efforts of the partner agencies with the development of Electronic Medical Records, information and terminology standards, including the coordination of agency efforts at relevant Standards Development Organizations (SDOs). According to the guidelines published by Centers for Medicare and Medicaid Services (CMS) in Medicaid Information Technology Architecture (MITA) 3.0 for Medicaid specifically, reference is made to the Federal Health Information Model (FHIM – refer to fhims.org). There is also the HL7 Reference Information Model (RIM). The United States Federal government has established a Federal Enterprise Architecture (FEA), which provides guidance to federal agencies on how they should develop their enterprise architectures. The methodology used by FEA, the Federal Segment Architecture Methodology (FSAM) recognizes that some "lines of businesses" in which the federal government is engaged cross agency boundaries. The healthcare line of business is one such case. As a result, the FHA was established as a partnership of over 20 departments and agencies to coordinate Healthcare Information Technology (sometimes called Healthcare IT, or HIT) activities among those partners. The FHA is managed by the Office of the National Coordinator for Health IT (ONC). The FHA has served as a forum by which the partner agencies have collaborated on several important initiatives, including the Nationwide Health Information Network.

The planned approach is to follow the NIEM methodology and NIEM model wherever it is defined. When we need to extend NIEM to capture data and relationships not currently in NIEM, we borrow entities and relationships from FHIM. If FHIM has not modeled the needed information, we then turn to HL7 RIM. FHIM Information model is depicted below in **Figure 7 - FHIM Overview Diagram**.

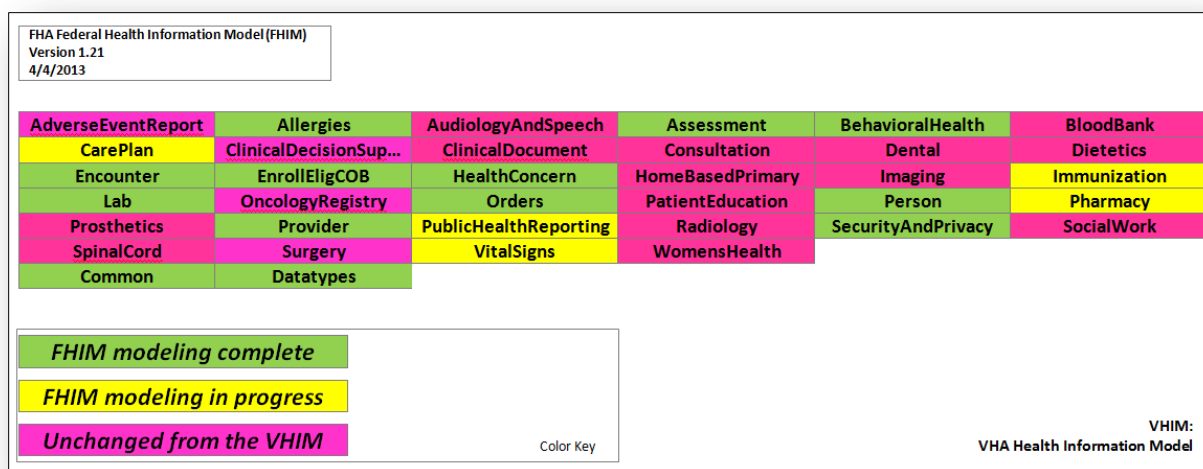


Figure 7: FHIM Overview Diagram

The FHIM Overview Diagram shows that the Enroll and Eligibility (Enrollment, Eligibility and Coordination of Benefits) domain modeling are complete.

The FHIM was initially populated by existing models provided by the partner agencies, including the Veterans Health Administration (VHA) Health Information Model, the Biomedical Research Integrated Domain Group (BRIDG) model, Structured Product Label, Common Product Model, Integrated Case Safety Report, and the Public Health Information Model.

The FHIM provides an authoritative semantic and structural enterprise-level reference information model. Its goal is to enable meaningful information exchange within the partner agencies and externally with the broader healthcare community.

The FHIM is a Unified Modeling Language (UML) class diagram supported by accompanying textual descriptions that depicts information of cross domain interest within the federal health segment. The FHIM provides a semantic information basis for information exchange, traceability, and alignment into industry information models and standards. FHIM classes and attributes are mapped to the HL7 3.0 RIM. A class model diagram of Enrollment, Eligibility and Coordination of Benefits domain is depicted in **Figure 8 - FHIM Enrollment, Eligibility and Coordination of Benefits Model** below:

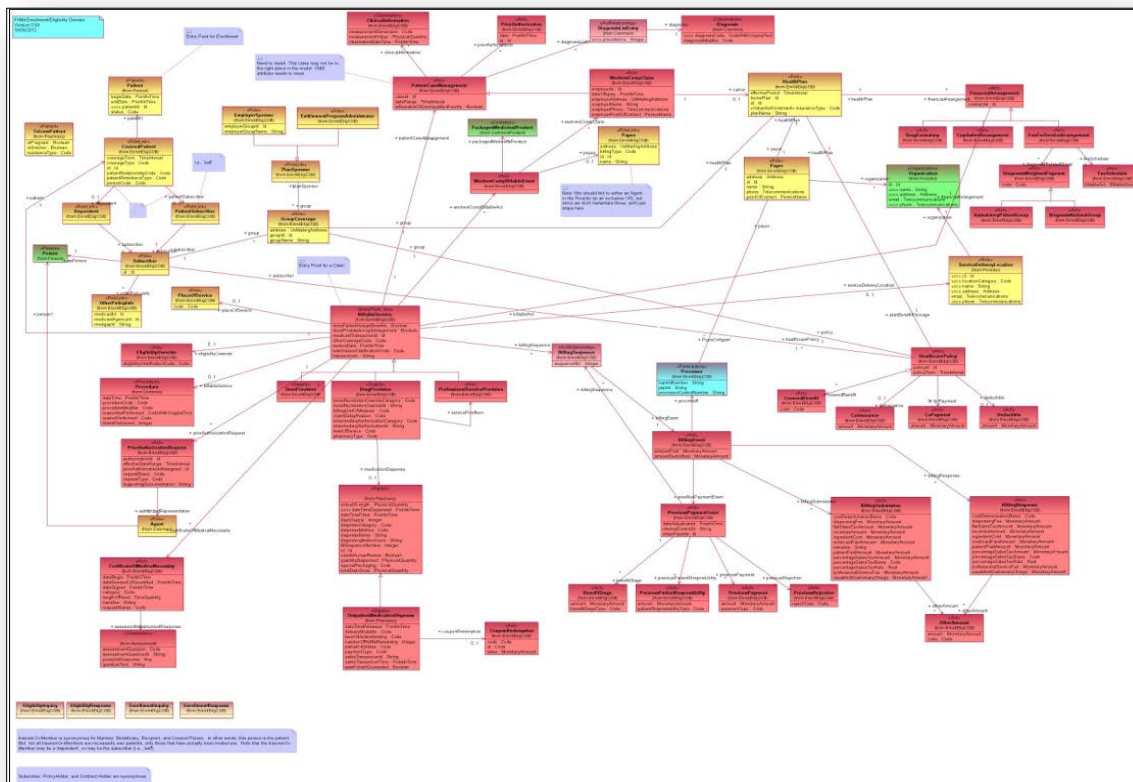


Figure 8: FHIM Enrollment, Eligibility and Coordination of Benefits Model

1.2.5 NIEM-UML

NIEM-UML makes the mapping process easier and faster. NIEM-UML is still in its infancy. Tools and plugins are being developed but are not completely tested yet.

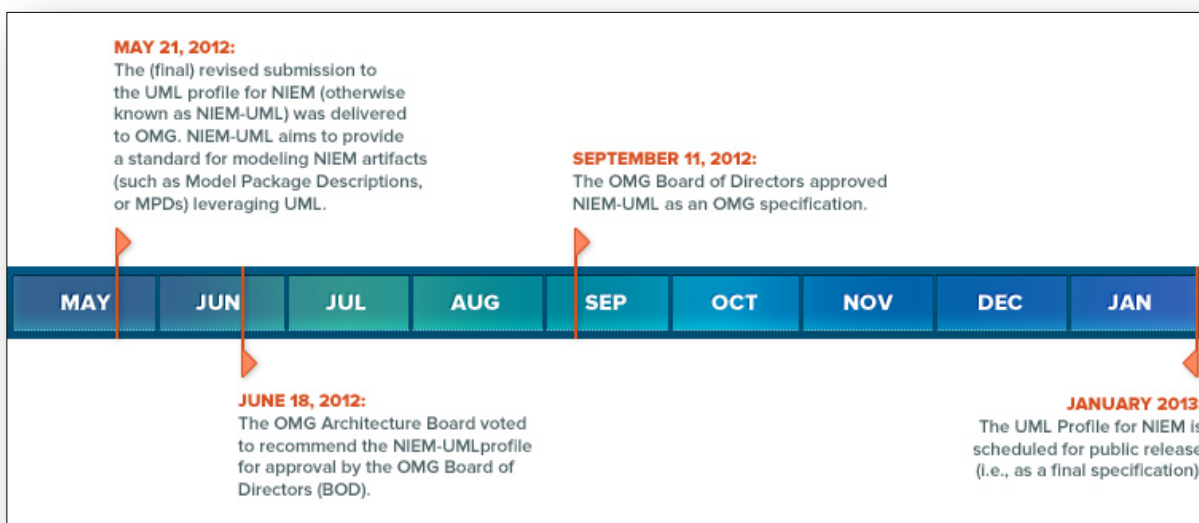


Figure 9: Timeline of NIEM-UML

The NIEM-UML has several approaches to data exchanges:

- XML– XML Schema Definition (XSD) schemas
- Simple Object Access Protocol (SOAP)
- Web Services

XML is a platform independent language and allows different platforms to talk to each other seamlessly regardless of the difference in platforms. The systems have data stored in various platforms like relational databases, mainframes, and Information Management Systems (IMS). The options would be to either use a Commercial Off-The-Shelf (COTS) product that can be customized to extract data from all these sources and generate XML files to send to NIEM. Or build reusable web services (in-house) that can extract data from all these sources and output it to an XSD-schema mapping the NIEM-UML specifications of the CORE and Domain specific attributes.

1.2.5.1 UML Profile for NIEM

The NIEM-UML Profile consists of four sub-profiles, as shown in **Figure 10 - Components of the NIEM-UML Specification** below. Each sub-profile is a subset of UML 2.4 constructs that are extended by UML stereotypes. The subset identifies those NIEM v2.1 concepts for which an analogous representation exists in UML.

Use of this subset ensures that a model produced by one user will be interpreted as expected by another user. The UML extensions define the NIEM concepts without an analogous representation in UML. All NIEM-UML models use the standard XML exchange format specified for UML 2.4 and may exchange NIEM models between conforming UML tools.

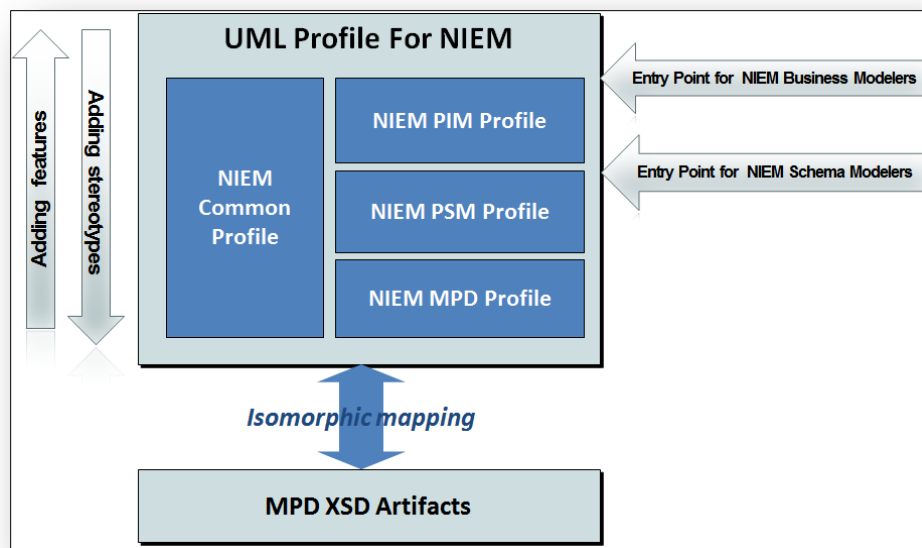


Figure 10: Components of the NIEM-UML Specification

These sub-profiles have distinct purposes and relationships:

- The NIEM Platform Independent Model (PIM) Profile provides stereotypes that enable NIEM business modelers to model an information exchange in a technology agnostic way and create a NIEM PIM.
- The NIEM Platform Specific Model (PSM) Profile provides stereotypes that enable NIEM technical modelers – or, more precisely, NIEM schema modelers – to model the technical aspect of an information exchange represented in a NIEM PSM.
- The NIEM Common Profile, leveraged by both the PIM and PSM profiles, which contains the core stereotypes used to represent NIEM structures in UML.
- The Model Package Description (MPD) Profile provides stereotypes for modeling NIEM MPDs, which are the final artifacts representing NIEM information exchange, based on either a PIM or PSM model.

As indicated in the Figure 10 above, this structure for the NIEM-UML profile provides direct “entry points” for both NIEM modelers who are primarily business oriented and NIEM modelers who are primarily technically oriented. However, it also defines a clear relationship between these levels, allowing modelers to also move flexibly between them using a common set of profile concepts.

1.2.5.2 NIEM Governance and Extension

NIEM’s governing structure is comprised of federal, State, local, tribal and private organizations. NIEM is jointly managed at an executive level by the Department of Homeland Security (DHS) and the Department of Justice (DOJ). The Governance model currently includes NIEM Executive Steering Committee (ESC), NIEM Program Management Office (PMO), NIEM Business Architecture Committee (NBAC), NIEM Technical Architecture Committee (NTAC), NIEM Communications and Outreach Committee (NC&OC), and is shown in **Figure 11 – Future NIEM Governance**. This model is being extended to include NIEM Tools Advisory Panel (NTAP) which will consist of Standard Developing Organizations (SDOs), NIEM Users, tool developers, and vendors.

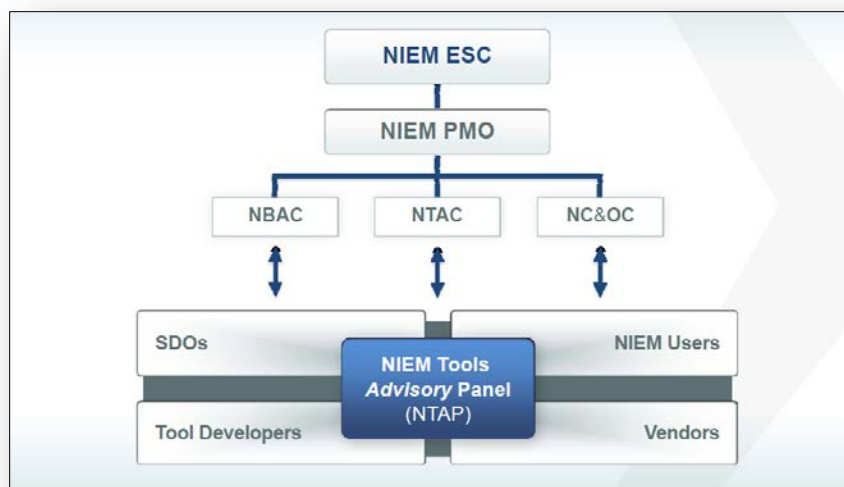


Figure 11: Future NIEM Governance

1.2.6 NIEM Human Services Domain

Effective information sharing is critical to the success of a coordinated Human Services (HS) system. The purpose of the NIEM HS domain is to support information sharing and promote interoperability between and across social service providers at the federal, state, tribal, and local levels. Standardized data and information exchanges help fulfill the following Human Services goals:

- Improved service delivery for clients
- Reduced errors and improved program integrity
- Improved administrative efficiency

1.2.6.1 Leveraging NIEM for Human Services

NIEM offers a proven approach for developing standardized, reusable information exchange packages and is being adopted across federal, state, and local government. The NIEM HS domain leverages the NIEM tools and processes which serve as reusable resources for new exchange development efforts so that content can be modeled in an agile and interoperable manner. Existing NIEM standards and IEPDs can be leveraged to help develop exchanges among the Human Services Community of Interest (COI). The experience and knowledge of NIEM practitioners will also help accelerate adoption.

1.2.6.1.1 Human Services Domain Content

The NIEM HS domain will complement the NIEM core with data common to human services, including financial, case status, and eligibility data. The HS domain provides harmonized data elements into the NIEM HS domain data exchange model.

1.2.6.1.2 Human Services Domain Activities

The NIEM HS domain is a component of a human services movement toward interoperability. The Administration for Children and Families (ACF) has made it a high priority to create and encourage greater collaboration and service integration among programs and agencies. Service integration or interoperability of human service programs offers opportunities to improve client outcomes, lower costs, and enhance operational efficiencies.

This domain will initially seek to leverage data from state and local interagency cooperative projects and recommended data exchanges described in federally prescribed state system development and certification guides.

1.2.6.2 NIEM Engagement Process (NEP)

The NEP was developed as a method for organizations interested in or currently incorporating NIEM in their information sharing and exchange activities. The NEP provides the participants with the opportunity to understand the necessary capabilities and needs for successful NIEM adoption. The tools created for the NEP are designed to support conducting a self-evaluation assessment that calculates NIEM readiness. Once an organization has performed the assessment, the NEP provides a proposed approach for NIEM adoption which is described in this document.

As seen in **Figure 12 - NIEM Engagement Process Method and Tools** below, the NEP provides a reusable framework that organizations can use to:

- Assess information-sharing capabilities and readiness to adopt NIEM.
- Evaluate the potential costs and benefits of NIEM.
- Develop a NIEM adoption roadmap and tactical implementation plan.

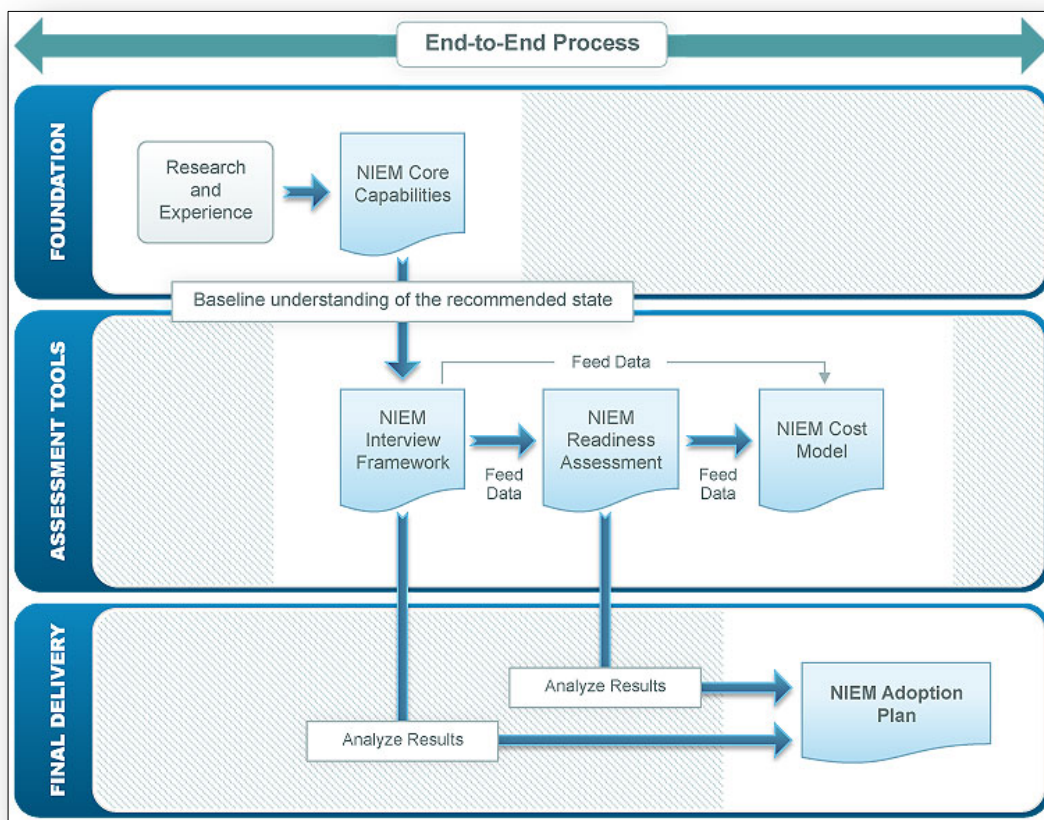


Figure 12: NIEM Engagement Process Method and Tools

1.2.6.2.1 NIEM Adoption Plan

The final step in the NEP is to develop a tactical plan for NIEM adoption. The results gathered when following the NIEM Interview Framework, NIEM Readiness Assessment, and NIEM Cost Model provide organizations with the necessary information for designing an action plan for future implementation of NIEM processes.

The figure below indicates steps that outline an adoption plan upon completion of the NEP. These steps have been designed as a high level plan for exchange activities that have scored in the **“Ready”** category after completing the **NIEM Readiness Assessment**. Those exchange activities of high priority or scoring just under the **“Ready”** (below 90%), are deemed capable with minimal growth needed against the NIEM core capability indicator ratings. The action plan phases are detailed in the following sections.

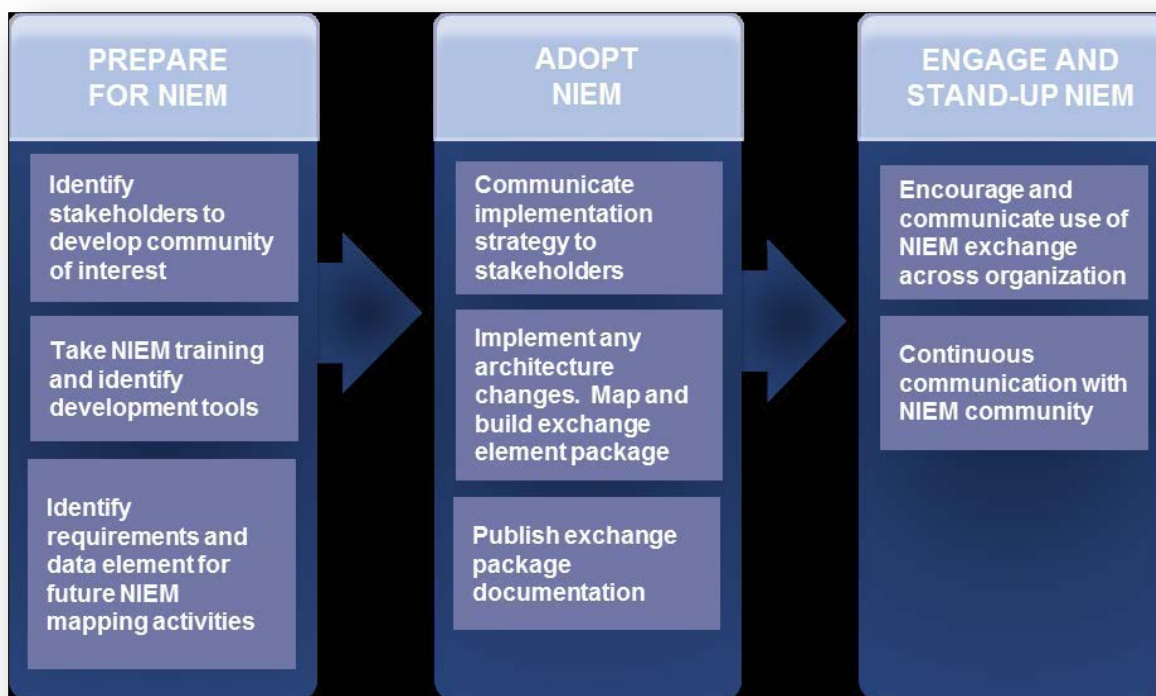


Figure 13: High Level NIEM Adoption Plan

1.2.7 Exploration Questions

This plan in conjunction with the plans covered under this grant will seek to explore and answer the following questions in **Table 2 - Exploration Questions**.

Table 2: Exploration Questions

Index	Exploration Questions
Q1	What resources will be needed to integrate OKDHS human services programs into Medicaid Information Technology Architecture (MITA) Maturity Model (MITA Framework Version 3.0)/ National Human Services Interoperability Architecture (NHSIA) compliant architecture?
A1	Resources required are Data Architect, Data Modeler, Database Administrators, Security Architects, Business Analyst, Business Architects, experienced XML Developer, Business Liaison, Program Manager, Stakeholder participation, executive level participation for data governance, and resources from NIEM/NHSIA.
Q2	What technical and business architecture will be needed at OKDHS to integrate MITA? What is the security architecture that protects the interests of all State agencies?
A2	SOA and ESB architectures will be needed. Identity management and access control is needed including strong authentication. Network and infrastructure security also make up the security architecture. The Global Federated Identity and Privilege Management (GFIPM) could be used for federated identity and privilege management to allow users from one federation partner to seamlessly access resources from another partner in a secure and trustworthy manner.
Q3	What is needed among the health and human services agencies to develop and share

Index	Exploration Questions
	Enterprise Master Person Index (eMPI)?
	The participating agencies were questioned as to the matching criteria that they use in their systems to identify a person. Except OSDH, for all other agencies applying the Master Data Management (MDM) technology to leverage the eMPI concept by storing them in a master data for ease of access and sharing, and thus reducing the errors and maintenance cost of the stored data, would be a valuable asset when focusing on eMPI for interoperability. OSDH has a state mandate that the Birth information is only released to certain designated agencies and their data cannot be shared for eMPI purposes.
Q4	What initiatives of the MOSAIC human services eligibility and case management system can be shared with OHCA initiatives under the Affordable Care Act?
A4	The effort towards the design of MOSAIC may be utilized to some extent for the enterprise-wide interoperability since MOSAIC covers the interoperability between three big OKDHS lines of business.
Q5	What efficiencies can be gained by using SOA?
A5	<p>The SOA will give us a more agile environment and can transform the IT landscape by increasing efficiencies and decreasing costs.</p> <p>Efficiency = output/input*100</p> <ol style="list-style-type: none"> 1) Efficiency operates within the context of other performance measures like effectiveness, return on investment etc. <p>Efficiency must be measured relative to a standard – the ideal point before efficiency becomes a negative measure.</p>
Q6	How can governance be used to achieve the wide range of performance expectations?
A6	<p>Governance refers to the means for achieving direction, control, and coordination. Data governance enables high performance because it is a key component in effective information management. Following are the most important characteristics to support a successful data governance implementation:</p> <ol style="list-style-type: none"> 1) The business case for data governance should be established early on and is used to guide the prioritization of data governance implementation. Metrics should be identified that enable measurement of the business benefits delivered. 2) The approach to data governance accounts for the people, process and technology aspects. This shows that data governance is as much about leadership, communication and good management as it is about technical integration. 3) The implementation of data governance should be planned as a journey, with distinct phases reflecting an organization's evolution along the spectrum of information management maturity. 4) Realistic expectations should be set about the benefits, timelines and capabilities associated with data governance. <p>Data governance should be tackled within the context of a comprehensive data management approach that also addresses data architecture, metadata and data structure, MDM, data quality and data security.</p>
Q7	How can Oklahoma improve overall State IT operating and cost efficiencies?
A7	<p>Using the SOA Architecture integrated with MDM technology for the overall architecture and using NIEM to leverage NHSIA for data exchanges Oklahoma will significantly reduce cost of maintenance of data and services.</p> <ol style="list-style-type: none"> 1) MDM will provide a one stop shop for eMPI data that will lower the maintenance

Index	Exploration Questions
	<p>costs, provide high performance scalable system thus resulting in better services to the customers: Good Service, Happy Customers.</p> <p>Using NIEM for data exchanges will allow disparate systems to talk in one language. It creates a seamless transfer of information instead of a point-to-point architecture. Point-to-point architecture is hard to maintain and any change would prove to be more costly than if we were following a predefined process defined by an existing framework that is proven to work for governments. It provides a more agile system and since it's based on SOA, implementing changes would be easier, less time consuming and would lead to cost avoidance for the state.</p>

1.2.8 Goals/Objectives

The major goals/objectives to be achieved with the implementation of NIEM are summarized in **Table 3 – Goals/Objectives**.

Table 3: Goals/Objectives

Goal/Objective	Desired Outcome	Measurement	Impact
Standardization	Enterprise wide standards	Adopted by Inter/Intra Agencies and Programs	Improved efficiency
Reusability	Shared & reused data	Adopted as a model by other states	Reduction of development time
Reduce Data Redundancy	Less data redundancy	Adopted by Inter/Intra Agencies and Programs	Improved data integrity and reduced errors
Governance	Policies and Procedures	Adopted by Inter/Intra Agencies and Programs	Conformance to standards
Compliance to NHSIA framework	Standardization	Adopted by Inter/Intra Agencies and Programs	Conformance to standards, reusable services
Compliance to NIEM framework	Standardization	Adopted by Inter/Intra Agencies and Programs	Conformance to standards, reusable services
Improved cost	Streamlined services to reduce cost	Adopted by Inter/Intra Agencies and Programs	Low cost, reduced errors and reusable services

1.2.8.1 Improve service delivery for clients

The implementation of SOA along with MDM technology supports the business needs across state agencies and benefits the client in several ways by:

- Reducing the amount of documentation families must submit to apply for multiple benefits
- Reducing the time spent by families applying or retaining eligibility
- Providing accurate, reusable and easily accessible services
- Reducing errors by increasing efficiency and improving performance
- Reducing customer dissatisfaction by supplying readily available information

The eligibility determination is currently a mix of processes; there are manual and electronic processes for the various federal social service programs that are integrated only through custom interfaces with no exchange standards. No standard electronic application currently exists that can be used across multiple public assistance programs. An interoperable, reusable eligibility system will help bridge this gap. This improvement can be enabled by not only leveraging the evolving Oklahoma enterprise SOA framework, but also the governance strategy to facilitate proper design and execution of a prospective enterprise workflow. This use case also provides an opportunity to explore how additional efficiencies can be achieved to meet the ACA Gold Standard User Experience, where clients are automatically referred to appropriate services.

Determining Eligibility Under Affordable Care Act – The ACA Gold Standard User Experience refers to an improved Eligibility System for customer satisfaction. As is stated in the “Guidance for Exchange and Medicaid Information Technology (IT) Systems” by CMS, Eligibility Process should be a streamlined, secure, and interactive customer experience that will maximize automation and real-time adjudication while protecting privacy and personally identifiable information. Eligibility process should encapsulate the following functionalities:

- Individuals will answer a defined and limited set of questions to begin the process, supported by navigation tools and windows that open to provide or seek additional information based on individual preferences or answers.
- The application will allow an individual to accept or decline screening for financial assistance, and tailor the rest of the eligibility and enrollment process accordingly.
- The required verifications that will be necessary to validate the accuracy of information supplied by applicants will be managed in a standardized fashion, supported by a common, federally managed data services hub that will supply information regarding citizenship, immigration status, and federal tax information.
- Tools for calculation of advance premium tax credits will also be provided.
- Business rules will be supplied that will allow for resolution of most discrepancies through automation, including explanations of discrepancies for the consumer, opportunities to correct information or explain discrepancies, and hierarchies to deal with conflicts based on source of information and extent and impact of conflicts on eligibility.
- Individuals will attest to the accuracy of the information they supply.

The goal is to serve a high proportion of individuals seeking health coverage and financial support through this automated process.

1.2.8.2 Reduce errors and improve program integrity

A critical challenge to realize an enterprise solution for the Eligibility Use Case is a common and accurate way of identifying clients, which is consistent across agencies. Oklahoma does not currently have a statewide eMPI; the addition of an eMPI will aid all agencies data steward functions when attempting to align persons across systems.

For example, currently, multiple identifiers exist for eligibility determination for, the Insure Oklahoma (IO) members, including a member ID (an OKDHS identifier) and an IO case ID (an Insure Oklahoma identifier). In the current workflow where manual reference checks are performed, the opportunity for errors increases. Through the development of an eMPI:

- Errors can be reduced
- Accuracy of eligibility determinations increased

Using the MDM, all eMPI focused data will be stored in one location, which will be maintained in a regular basis thus reducing the chance of pulling erroneous information. Information reported to or available in one program can be shared with other programs in support of program integrity efforts.

1.2.8.3 Improve administrative efficiency

Performance improvements can be realized through the development of business processes, enabled by SOA, which can automatically perform eligibility validation and cross-referencing, as web services are enabled across the enterprise. Through the SOA Roadmap, the development of business processes and the validation performed by web services to support these processes, administrative activities can be transformed to reduce redundancy of effort and streamline workflows.

1.3 Current System Overview

Figure 14 - AS-IS System Overview – Data Exchanges shows the data exchanges between OKDHS agencies (e.g., PS2 - Adult and Family Services (AFS), Oklahoma Support Information System (OSIS) - Oklahoma Child Support Services (OCSS), KIDS – Child Welfare Support (CWS)), and other departments and organizations (e.g., OHCA – Medicaid Management Information System (MMIS), Office of Management and Enterprise Services (OMES), OSDH).

90FQ0006-00 Oklahoma Interoperability Grant Project
National Information Exchange Model (NIEM) Analysis Roadmap, July 30, 2013

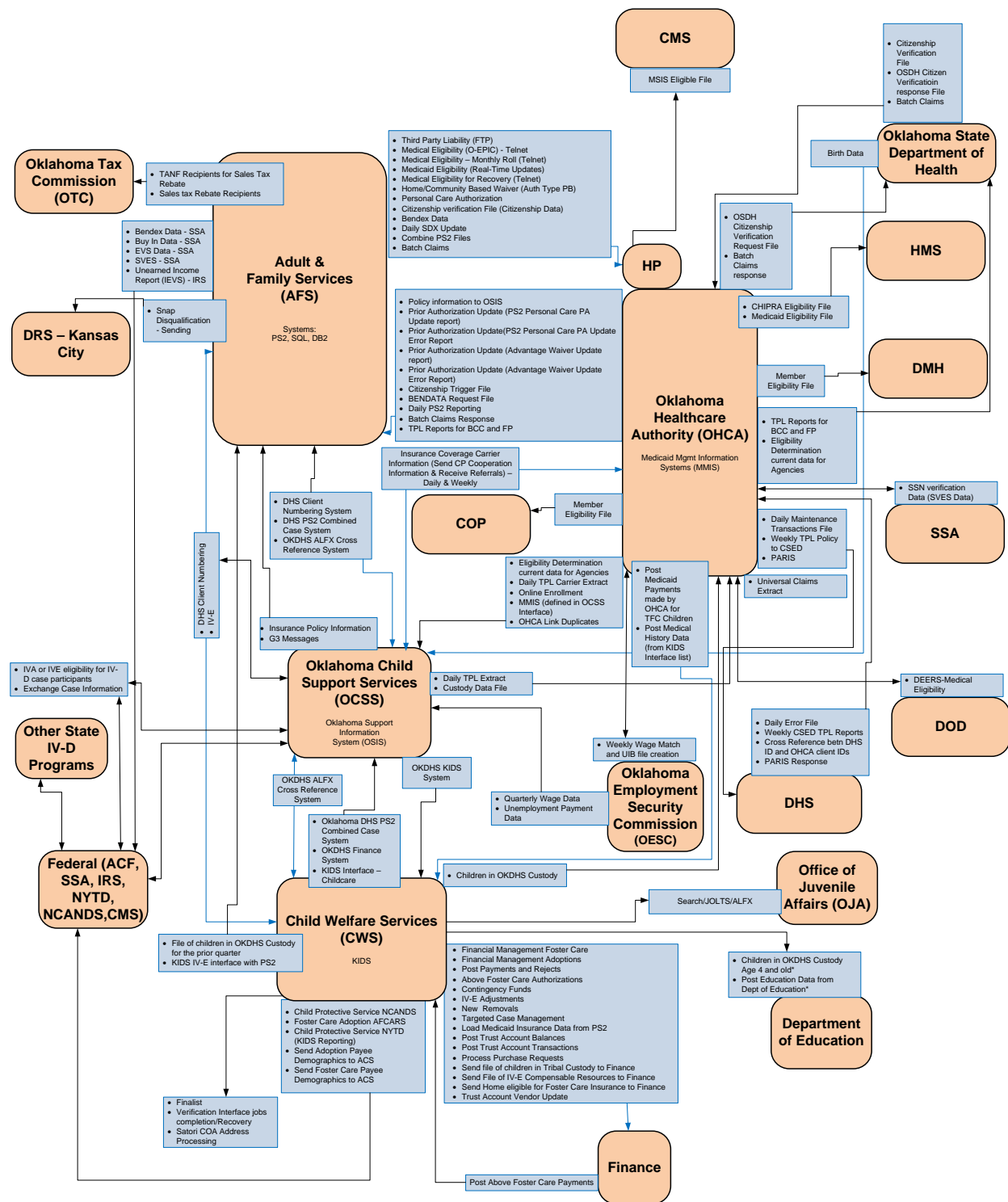


Figure 14: AS-IS System Overview – Data Exchanges

Systems involved in the Interoperability project are owned by OSDH, OHCA, CWS, OCSS, and AFS. These systems have various types of data that are being exchanged via interfaces. Interfaces could be Real-Time (data is accessed directly any day/any

time), Transactional or Transfer (push/pull via ftp services). **Table 4 - Systems and Owners** shows the programs that were taken into consideration in each Systems/Owner.

Table 4: Systems and Owners

System Name	Owner
Oklahoma Support Information System (OSIS)	Jim Hutchinson, Oklahoma Child Support Services (OCSS)
PS2	James Conway, Adult and Family Services (AFS)
KIDS	Marvin Smith, Child Welfare Service (CWS)
Medicaid Management Information System (MMIS)	Jerry Scherer, Oklahoma Health Care Authority (OHCA)
Vital Records	Kelley Baker, Oklahoma State Department of Health (OSDH)

See Appendix A-1-1 for the list of AS-IS interfaces.

1.4 Scope/Requirements

In this paper several interfaces/data exchanges between agencies are assessed, and analyzed. The interfaces that are leveraged are:

- Citizenship verification – The goal is to streamline the process, make it real time and standardized and interoperable which will benefit the user because of the effectiveness of the process.
- OKDHSLive Interoperability – The new procedure for applying for benefits will be real time, interoperable, standardized and streamlined.
- OHCA online enrollment for SoonerCare Medicaid Eligibility and OCSS referrals – The new procedure for information exchanges will be real time and standardized. Due to time constraints the scope was limited to process gathering information on the AS-IS process.

1.5 Approach and Recommendations

Our Recommended Approach would be to:

1. Identify the Business Process.
2. Create:
 - a. Business Process Diagrams
 - b. Sequence Diagrams
 - c. Use Case
3. Identify business rules and Requirements at the data element level.
4. Conduct stakeholder interviews for the identified interfaces and get their agreement on the approach and get all required information from them.
5. Create Exchange Content Model, UML Diagrams – Mapping to NIEM objects/elements.

6. Create schemas (Constraint, extension) based on our findings while comparing with NIEM schemas.
7. Create IEPD main document.
8. Generate other artifacts for the IEPD.

1.5.1 Recommendations

1.5.1.1 Core Data

We recommend the use of the NIEM guidelines to develop, disseminate and support standards and processes that enable the consistent, efficient and transparent exchange of data elements between programs.

1.5.1.2 Privacy and Security

The security will be defined by the Security Architecture. However, we do recommend including the following safeguards:

- Data in motion should be encrypted. Valid encryption processes for data in motion are those which comply with National Institute of Standards and Technology Special Publication (NIST SP) 800-52, 800-77, or 800-113, or others which are Federal Information Processing Standards (FIPS) 140-2 validated.
- Automated eligibility systems should have the capability to record actions related to the Personal Identifying Information (PII) provided for determining eligibility. The date, time, client identification, and user identification must be recorded when electronic eligibility information is created, modified, deleted, or printed; and an indication of which action(s) occurred must also be recorded.
- Generate audit logs. Enable a user to generate an audit log for a specific time period and to sort entries in the audit log.

1.5.1.3 Governance

- Establish governance to support interoperability and efficient data management.
- Establish an Interagency Steering Group (OKDHS, OSDH, OHCA, etc.) and subcommittees consisting of Subject Matter Experts (SMEs) from various areas e.g. stakeholders, IT staff, executive level staff, etc.
- Resource Interoperability PMO.
- Policy and technology standards and procedures for data stewardship, security and consent.
- Seek clarification on federal and state confidentiality rules so information can be shared and used more effectively.
- Leverage basic building blocks for interoperability including: FHIM, MITA, NHSIA and the proposed Health and Human Service NIEM Domain.

1.5.1.4 Tools to Manage NIEM Implementation

1. **OASIS Content Assembly Message (CAM)/jCAM** – The open source OASIS CAM/jCAM toolkit provides a selection of tools that directly support NIEM. The CAM toolkit supports end to end development of NIEM IEPDs from inception to delivery of completed XSD schema, XML test cases and business rule documentation. The toolkit is an implementation of the OASIS CAM v2.0 standard. The toolkit also supports development of domain dictionaries and currently includes the LEXS dictionary along with local copies of NIEM 2.0 and NIEM 2.1 dictionaries in XML. The toolkit also supports importing enterprise data models, applying NDR checks and spelling and renaming automation. An introduction to the concepts of using CAM to develop NIEM IEPDs using either dictionaries or blueprints or by ingesting existing XSD schema is available at the OASIS CAM TC documents website (http://sourceforge.net/apps/mediawiki/camprocessor/index.php?title=Main_Page).
2. **NIEM Wayfarer 2.1** – A tool developed by a NIEM practitioner that provides the ability to search the NIEM data model during the mapping process. NIEM Wayfarer is a preferred tool by many implementers during the search and mapping process, but is not supported by the NIEM PMO, and might not reflect the most current version of NIEM. This tool is publically available on the web (<http://apps.ncsc.org/niem/>).
3. **Justice Information Exchange Model (JIEM) modeling Tool** – The current JIEM® Reference Model is a set of information exchanges regarding business functions that are common to most jurisdictions. More research needs to be done to check if this tool supports Health and Human Services Information Exchange.
4. **NIEM SAW** – NIEM SAW is a tool for exploring and searching NIEM, an XML interchange standard for US Federal, state, and local government information, including law-related information. This could be taken as an example if we need to build one for health and human services related information. SAW runs on a local computer.
5. **Oracle SOA/BPM Suite** – Oracle SOA Suite is a SOA-enablement platform that provides organizations with a robust infrastructure to support application integration, service orchestration, business process management, and messaging. Business Process Management (BPM) capability with human workflow support can be purchased as an add-on to the SOA Suite.
6. **SSGT** – Georgia Tech tool to that provides the ability to search the NIEM data model during the mapping process. It also generates the artifacts that are required for the IEPD creation.
7. **Cameo NIEM-UML Solution** – Cameo NIEM-UML is part of No Magic Cameo Suite. Using the Model Driven Architecture (MDA) standards of the Object Management Group (OMG), the Cameo Suite can help automate the production of multiple technologies and application artifacts from UML models.

1.6 Assumptions and Constraints

Assumptions:

- The partnership is committed to the development of a roadmap for integration of Service Oriented Architecture (SOA)/Enterprise Service Bus (ESB) to allow fully automated data exchange and service reusability for all services exchanged between OKDHS and OHCA and other initiatives.
- The partnership is committed to the development of a model for the use of the National Information Exchange Model (NIEM) to enable a consistent exchange of data.
- The partnership is committed to focusing on programs that addressed those interactions between OKDHS, OHCA and OSDH, which is scoped as medical and Medicaid. This should further focus our current scope of eligibility and enrollment.

Constraints:

- **Schedule Constraints:** Delayed start on Interoperability Planning Grant, the schedule is contingent upon approval of SOA Roadmap. Currently separate agencies, divisions and programs have different schedules for upgrading systems and infrastructure based on immediate needs, federal rules and available funding. Agencies are in different stages of the process. For example one is planning, one has an RFP out and the other is in progress. Due to the large scope of data exchanges, for the NIEM Analysis Paper, only three of the exchanges were picked up for the purpose of analysis.
- **Data Constraints:** Focusing on Eligibility and eMPI, initially on data exchange between agencies/programs.
 - ✓ Currently OKDHS, OHCA, OSDH each have and use their own intake for services and MPI process. This is a business data constraint because we collect different information in different ways for different purposes but need to share that information between when we have common customers.
 - ✓ OKDHS, OHCA and OSDH have requirements to have interagency data sharing agreements. This is a constraint because it takes on a lengthy path through business, legal and executive reviews and approvals.
 - ✓ OKDHS, OHCA, OSDH and our federal partners have similar or same data but different data definitions.
- **Hardware Constraints:** Any required hardware must fit with SOA and Enterprise Architecture, and acquisition of any additional hardware is dependent on funding or financial constraint.
- **Software Constraints:** Any required developed or COTS software must fit within the approved SOA and Enterprise Architecture, and acquisition of any additional software is dependent on funding or financial constraint.

- ✓ Not only does our organizations not use any common COTS product to share business data or processes we have varying degrees of software applications and languages in each internal organization.
- **Organizational Constraints:** Resource acquisition and allocation may be a factor in implementing the Interoperability Plan. Policies and procedures may be too specific to share or reuse for purposes other than eligibility. OSDH cannot share Vital Records as an eMPI by State mandate, but could be shared in the future based state and legal agreements.
 - Each organization uses their own data center and resources to manage and support the hardware and software that support the organizations business data and processes. In addition by having varying types of hardware and software requires different types of resources and skills sets to maintain theses.
 - Business process changes that may be required to implement the interoperability plan will likely meet with resistance from affected staff in each organization.
 - Funding streams often dictate specific guidelines, policies, systems, etc, and we may not be able to influence change with the respective Federal agencies. In the interim, we must be compliant with federal funding terms and conditions.
 - Some agencies may have some systems that are considered proprietary by a vender.

Some policies and practices are based in State and Federal law which govern accessibility to data.

- **Security Constraints:** The regulations of the Internal Revenue Service (IRS), HIPAA, and Social Security Administration (SSA) must be considered. Compliance with Federal and State Mandates for Accessibility, Compliance with Program requirements for Confidentiality, Compliance with Federal and State Mandates, as well as IT Standards for the creation, storage, reading and transfer of data need to be taken into consideration.
- **Political Constraints:** Local, state or federal mandates may impose constraints.
- **General Constraints:** Federal funding streams earmarked to certain programs with attached restrictions and regulations create artificial silos creating barriers to achieving interoperability across various human service organizations and programs. In a sense, this barrier makes it difficult for certain organizations to “break out” of their current silos; although the Memorandum of Agreements (MOU) and Service Level Agreements (SLA) between organizations attempt to solve some of these issues, this barrier is ever present based on the pure mechanics. As implementation of the NHSIA Business Viewpoint strives interoperability through a functional point of view so must go the federal funding streams and associated restrictions and regulations if true interoperability is to be archived.
- The partnership is committed to the development of a roadmap for integration of Service Oriented Architecture (SOA)/Enterprise Service Bus (ESB) to allow fully

automated data exchange and service reusability for all services exchanged between OKDHS, OSDH and OHCA and other initiatives.

- The partnership is committed to the development of a model for the use of the National Information Exchange Model (NIEM) to enable a consistent exchange of data.

1.7 Benefit to Other States

This Interoperability Plan can be used by other states to implement Enterprise Interoperability measures.

This roadmap supports the vision of a streamlined, secure, and interactive customer experience that maximizes automation and real-time decision-making while protecting privacy and personally identifiable information. It supports the goal to serve a high proportion of individuals seeking health coverage and financial support through an automated process. The roadmap uses the national standards for data exchanges. States interested in eligibility and enrollment can benefit from this roadmap because it provides a roadmap for implementing SOA architecture using NHSIA and NIEM.

- Roadmap: Identify the interfaces that could benefit from interoperability measures. Gather the requirements and business processes. Identify the details of the data elements that will be exchanged. Map the data elements to NIEM and, produce an IEPD Main Document for the exchanges.
- Map the AS-IS Information exchanges to NHSIA Information Exchanges.
- Leverage NHSIA through NIEM.

1.8 Options Enterprise Architecture and/or Modules

Leveraging NIEM for interoperability creates an enterprise wide reusable and standardized set of data exchanges.

1.9 End Result

Best practices will be taken into consideration to achieve maximum efficiency with interoperability. The results of cost benefit analysis and thorough assessment and gap analysis could be a factor that could bring a change to the proposed approach.

1.10 Breadth

The focus of this interoperability effort will include: state and federal programs that require eligibility determination: SNAP, TANF, LIHEAP, Aid to the Aged, Blind and Disabled, and the child care subsidy. Other human services programs that will benefit from a new configuration of IT services include Child Welfare, Child Support Services, Aging Services Division (Medicaid funded long term care waiver) and Developmental Disabilities Services (Medicaid funded community based waivers). Other state agencies

that are participating in the consortium include OHCA, Oklahoma Department of Mental Health and Substance Abuse Services and Oklahoma State Department of Health's program; Women, Infants and Children (WIC). Other business segments involved in planning include the Department of Public Safety and the State Department of Education.

1.11 Human Services Program and Initiatives

OKDHS is undertaking a multi-year, multi-program, agency-wide effort to update its technology, streamline and improve its business practices, consolidate its information systems, and provide a secure, compliant Web portal for OKDHS employees, clients and providers to conduct daily business...anytime, anywhere. OKDHS is pursuing a new Enterprise Software solution that is flexible and supports interoperability to allow internal and external stakeholder's access to the Enterprise System and data, regardless of technology. OKDHS is seeking an Enterprise Software solution that will increase client use of self-service tools. The project will lead to a fully-functional, automated system that meets federal certification, compliance and mandates for child support, child welfare, and adult and family services and the associated titles and certifications needed for certification.

1.12 Information Technology Initiatives

OKDHS is working with state governance and leadership to procure the software, installation and configuration for an enterprise human services application (HSA) to support the core business functions and processes of OKDHS, as described for the Enterprise System. Also, the OHCA is seeking to implement the technical aspects of the Affordable Care Act for Oklahoma. Many aspects of the OHCA plan are consistent with the approach envisioned by the model. OHCA and OKDHS are working together on both of their initiatives to assure no duplication in funding or resources for similar projects using the MITA and NHSIA principles of re-usability. The proposed system will:

- Modernize existing system functionality to provide recipients a "golden standard" of customer care (i.e., a consistent look and feel across stakeholders and seamless customer service with consistent metrics to measure and continuously approve the customer experience).
- Significantly enhance the ability for providers to have prompt access to member eligibility and enrollment information to ensure that eligible individuals receive the health care benefits to which they are entitled and that providers are reimbursed promptly and efficiently.

An individual seeking health coverage in 2014 will be able to access information and assistance, and apply for health coverage, through multiple channels. All of these channels will connect with a standardized, web-based system to evaluate the individual's eligibility for coverage through one of four programs:

- Qualified health plans through the Exchange (with or without Guidance for Exchange and Medicaid Information Technology (IT) Systems 4 Version 2.0 May, 2011/Centers for Medicare & Medicaid Services advance premium tax credits and cost-sharing reductions)
- Medicaid
- CHIP
- Basic Health Program, if established by the state

MITA ensures the availability of high-quality health care coverage to families and individuals who are achieved through a collaborative partnership between and within federal agencies and states responsible for implementation of the Exchanges and the Affordable Care Act's Medicaid and CHIP provisions.

MITA envisions a streamlined, secure, and interactive customer experience that will maximize automation and real-time adjudication while protecting privacy and personally identifiable information. Individuals will answer a defined and limited set of questions to begin the process, supported by navigation tools and windows that open to provide or seek additional information based on individual preferences or answers. The application will allow an individual to accept or decline screening for financial assistance, and tailor the rest of the eligibility and enrollment process accordingly. The required verifications that will be necessary to validate the accuracy of information supplied by applicants will be managed in a standardized fashion, supported by a common, federally managed data services hub that will supply information regarding citizenship, immigration status, and federal tax information. Tools for calculation of advance premium tax credits will also be provided. Business rules will be supplied that will allow for resolution of most discrepancies through automation, including explanations of discrepancies for the consumer, opportunities to correct information or explain discrepancies, and hierarchies to deal with conflicts based on source of information and extent and impact of conflicts on eligibility. Individuals will attest to the accuracy of the information they supply. The goal of MITA is to serve a high proportion of individuals seeking health coverage and financial support through this automated process.

1.13 Health Intersection

Frameworks MITA and NHSIA were taken into consideration to achieve interoperability for eligibility services. During research it was found that NHSIA is aligned with MITA. The roadmap takes these findings into consideration and plans to work with NHSIA framework since it's more geared towards Human Services; however understanding that MITA is more mature than NHSIA in certain aspects, the roadmap gives an option to use MITA in such cases where NHSIA is not mature.

1.14 Data Governance

To achieve interoperability for this and other cross-agency activities, a governance model for a SOA must be put in place to guide sharing at both the data and web

services levels, and achieve a cross-organizational consensus and understanding at the workflow (i.e., business process) level. This project will codify and execute infrastructure/data governance, webservice governance, and business process governance models to meet the needs of the enterprise.

Data Governance encompasses the people, processes and procedures required to create a consistent, enterprise view of an organization's data to:

- Promote information sharing
- Improve confidence and trust in data used in decision-making
- Make information accessible, understandable, and reusable
- Reduce cost and duplication
- Improve data security and privacy

1.14.1 Overview

To guarantee prolonged data quality, it is indispensable to contemplate a data governance initiative to accomplish the metrics for data accountability. Data Governance specifically helps establish strategy, objectives and policy to effectively manage enterprise data by specifying accountability on data and its related processes including decision rights. For example, Data Governance defines who owns the data; who creates records; who can update them; and also, who arbitrates decisions when data management disagreements arise.

1.14.2 Sponsor

A sponsor and funding strategies for data governance needs to be identified. Components of Data Governance:

- Data Governance Committee (and Office/Location)
- Oklahoma Healthcare Authority
- Department of Health
- Adult and Family Services
- Child Welfare Services
- Child Support Services

1.14.3 Data Stewardship

Data stewardship is the management and oversight of corporate data by designated personnel who typically don't own the data but are responsible for tasks such as developing common data definitions and identifying data quality issues. The Data Stewardship (or Governance) Council consists of a set of data stakeholders who come together to make data related decisions. They may set policy and specify standards, or they may craft recommendations that are acted on by a higher-level governance board.

Specific responsibilities of Data Stewards would include:

- Access Procedure
- Verify Compliance to Policies
- Coordination
- Documentation
- Communication
- Data Quality, integration and correction
- Data lifecycle and retention
- Data Storage
- Education to Employees on data quality
- Data Classification based on some criteria (e.g. risk, sensitivity).

1.14.4 Policies and Procedures (Data Access, Data Reusability, Data Integrity, Data Deduplication)

The mandates for citizenship verification process are attached as appendices: Appendix B-1-2 (OHCA Agreement) and Appendix B-1-3 (OSDH Agreement).

2 SYSTEM/INTERFACE TO-BE OVERVIEW

The data exchanges will comprise of XML schemas. The diagram below, **Figure 15 - IEPD Inheritance Schema**, illustrates the inheritance schemas included in the IEPD. The purpose of the hierarchy diagram is also to define the acceptable inheritance scenarios.

As illustrated in the figure each of the schemas fits within one of the following categories:

2.1 Official NIEM Schemas

These will be a subset of schemas and represent a subset of the NIEM 2.0 standard schema, which will be generated using the Schema Subset Generation Tool (SSGT) available on the NIEM Tools website. The schemas in this category are maintained and exposed by the NIEM organization. The tools that will be utilized for searching existing schemas in NIEM are: SSGT and NIEM Wayfarer.

2.2 Health and Human Services Domain Exchange Model

The Health and Human Services (HHS) domain is currently in the works. The IEPDs created by this domain will be maintained and exposed by the NIEM Human Services Domain Governance Committee.

2.3 Agency Specific Schemas

These are specific schemas that will need to be grouped for data types and elements that pertain to a specific Oklahoma agency, and thus may be shared by IEPDs created by that agency, but not shared outside the agency. These schemas will be created, maintained and exposed by the agencies.

2.4 IEPD Specific Schemas

The data types and elements contained within these schemas are specific to the IEPD in which they exist and are not expected to be shared outside of the IEPD. As such, the schemas within this category are maintained within the individual IEPD and are not exposed outside of that scope.

Defining and using IEPD Specific data elements should be minimized since they cannot be leveraged across IEPDs.

There are two types of schemas within the IEPD. The exchange schema describes the root node of the document that is used within the actual exchange of data and any other elements that are specific to that exchange. The extension schema contains data types and elements that can be shared across multiple exchange schemas within the same IEPD.

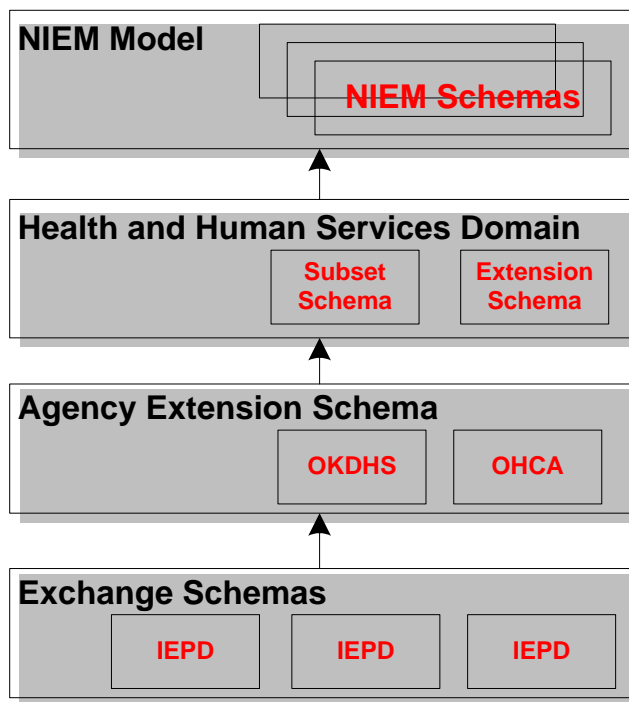


Figure 15: IEPD Inheritance Schema

2.5 Citizenship Verification Process

2.5.1 Executive Summary

For OKDHS, a state or Federal mandate requires an applicant for a particular benefit (e.g. Food Stamps) to prove they are a citizen. Currently, since DHS has Federal SSA and SSI information, OKDHS uses the determination of the Federal system to verify citizenship: that if a person is a citizen in the Federal database, then the State would consider that person a citizen too. So an initial automated search is performed on the Federal data. If verified that a person was not a citizen on the Federal database, for Medicaid, an additional check against OSDH data is done. If a person's citizenship is verified either with the Fed's or with OSDH, OKDHS database is updated with an appropriate flag. If no verification is found a notice is sent to the applicant to provide proof of the citizenship.

Currently, OHCA utilizes three methods to verify citizenship for their applicants. The primary method is the data match against the Social Security Administration-SOLQI service, this is a real-time verification. The second method is a manual data match against the Department of Homeland Security-VIS system.

Finally, OHCA uses a daily batch process to exchange information with OSDH; the first batch job sends a request with all applicants who have declared to be born in Oklahoma and whose citizenship has not been verified through other means. The second batch job processes the verifications OSDH returns to OHCA.

The criteria and elements OHCA considers to create the request are:

- Member's citizenship must not be previously verified
- The member declared he/she was born in Oklahoma
- The member must be eligible for other program than Mental Health
- Only verified Social Security Numbers are included in the request

Once the request file is created, it is FTP-transferred to OSDH for processing. The response file from OSDH then is processed by OHCA and the database is updated accordingly with the correspondent verifications.

OHCA maintains a life-time verification table where it keeps the citizenship verification records. Additionally, the document request for citizenship created when the application is submitted is keyed as met when someone's citizenship gets verified.

The release of the new Citizenship Verification Process for citizenship verification will allow the workers/clients to verify citizenship with Oklahoma State Department of Health real time so that the answer is instantaneous instead of them having to go through a wait period to get an answer back. It will also give the flexibility to verify citizenship for any agency that has an agreement/contract signed to use the Citizenship Verification Webservice.

Considerations for the service (web service):

- Any Agency can verify citizenship with either the Fed's or OSDH.
- If it's a two-step process the Agency will call the Fed's Service first and Citizenship Verification Webservice after that.
- Only designated Agencies (as specified in the contract/agreement) will be able to access the citizenship verification webservice.
- The output would be an indicator whether the citizenship was verified/not verified.
- The logic of whether to call just the Fed's Webservice or OSDH Webservice or both the webservices for citizenship verification is handled by the application calling the webservice (That would handle the cases for SNAP/TANF/Childcare/Medicaid taking different paths for citizenship verification for OKDHS).
- All processes dependent on the response from citizenship verification webservice will be handled by the application.

2.5.2 Business Processes

The owner of the Citizenship Verification Webservice (data exchange) will be OMES-ISD. The Business Process Diagrams and Sequence Diagrams can be found on the Citizenship Verification IEPD Main Document (Appendix B-1-4).

2.5.3 Use Cases

Use Cases can be found on the Citizenship Verification IEPD Main Document (Appendix B-1-4).

2.5.4 Requirements

1. Citizenship verification with Fed's (The details of this verification will not be covered in this paper).
2. Citizenship Verification with the Oklahoma State Department of Health.
3. Oklahoma State Legislature §63-5009. Development of managed care system - Administration of Oklahoma Medicaid Program.
4. Real time citizenship data exchange.
5. Implement NIEM as a standard for data exchanges.
6. Security requirements need to be worked out.

Business Rules for data elements are documented in Section 2.5.12.

2.5.5 Web Services

The detailed data elements that are exchanged for Citizenship Verification Webservices will be worked out in this paper. The Citizenship Verification Webservice could reside on an ESB. Figure 16 shows the details of the citizenship verification process.

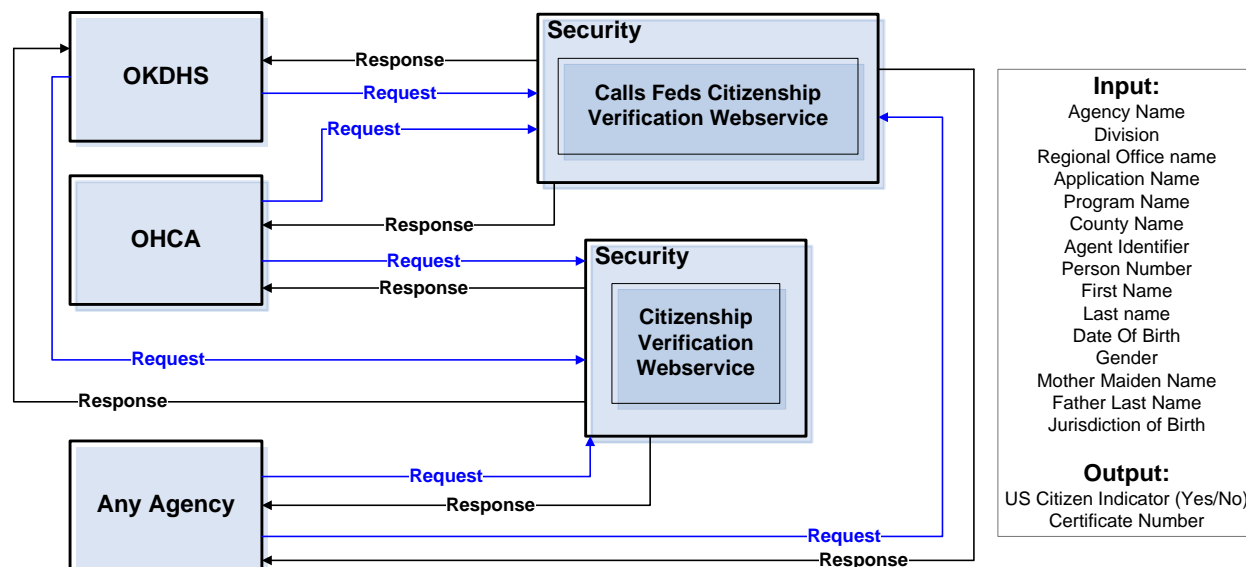


Figure 16: Citizenship Verification Process

2.5.5.1 Data Requirements to Citizenship Verification Webservice (Input)

Authentication Parameters for Agency/Application: The authentication parameters are identified below based on the OSDH requirement and preliminary study of the parameters required to identify the application within an agency.

- Agency Name – OSDH Requirement
- Regional Office Name – OSDH requirement
- Agent Identifier – OSDH requirement
- Division Name
- Program Name
- Application Name
- County Name

Information of the applicant for Citizenship Verification:

- Person Number
- First Name
- Last Name
- Date of Birth
- Gender
- Mother Maiden Name
- Father Last Name
- Jurisdiction of Birth

2.5.5.2 Data Requirements (Output)

- U.S. Citizen Indicator
- Certificate Number – OSDH requirement

Citizenship Verification Webservice details are given in **Figure 17 - Details of Citizenship Verification Webservice with OSDH.**

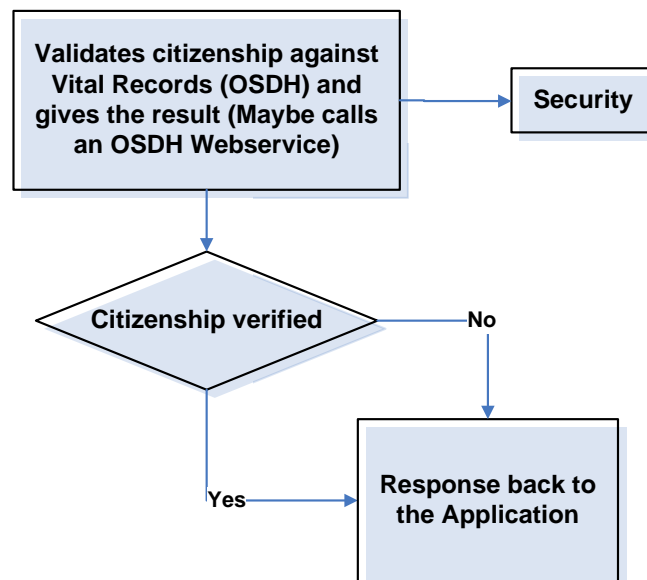


Figure 17: Details of Citizenship Verification Webservice with OSDH

2.5.6 Information Exchange

- Any agency passes information to citizenship verification webservice for citizenship verification.
 - ✓ Information required for Identity Manager to authenticate/authorize (also includes information required by OSDH to identify/audit source information)
 - ✓ Information of the applicant whose citizenship is being verified
- Citizenship Verification webservice sends request to OSDH
 - ✓ Agency/Agent Information
 - ✓ Information of the applicant whose citizenship is being verified
- OSDH sends reply back to Citizenship Verification webservice
 - ✓ Indicator
 - ✓ Required Response Information (could be some information sent for auditing purposes by OSDH e.g. Certificate number)

2.5.7 Exchange Content Model

UML diagram for the exchange is given below in **Figure 18 - Draft UML Diagram**.

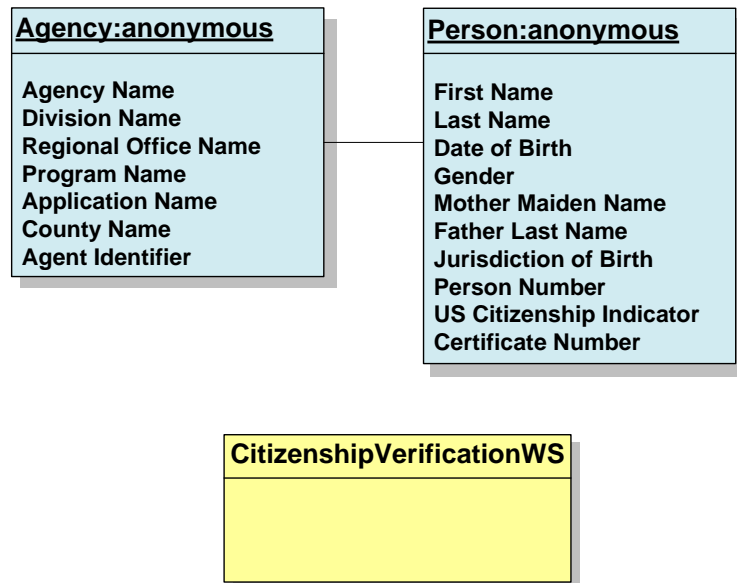


Figure 18: Draft UML Diagram

2.5.8 Mapping Document

Mapping Document is attached to the Citizenship Verification IEPD Main Document (Appendix B-1-4).

2.5.9 XML Schemas

XML Schemas are attached to the Citizenship Verification IEPD Main Document (Appendix B-1-4).

2.5.10 Functional Allocation

The following operations take place for Citizenship Verification with OSDH.

- Any agency:
 - ✓ Creates the request.
 - ✓ Calls Citizenship Verification Webservice.
 - ✓ Sends the request.
- Security (Statewide):
 - ✓ Checks required parameters for valid access to Webservice.
 - ✓ Grants/denies access to Citizenship Verification Webservice.
- Citizenship Verification Webservice:
 - ✓ Calls OSDH Webservice.
 - ✓ Sends request for citizenship verification.

- ✓ Receives answer from OSDH.
- ✓ Sends response to the agency.
- OSDH:
 - ✓ Receives request from Citizenship verification webservice.
 - ✓ Validates records with Vital Records.
 - ✓ Updates the backend with the information received. This information might be used for audit purposes later.
 - ✓ Sends response to Citizenship verification webservice.

2.5.11 Data Transfer

The sequence diagram in **Figure 19 - Sequence Diagram of Citizenship Verification Webservice** shows the data transfer between the different entities involved in citizenship verification webservice.

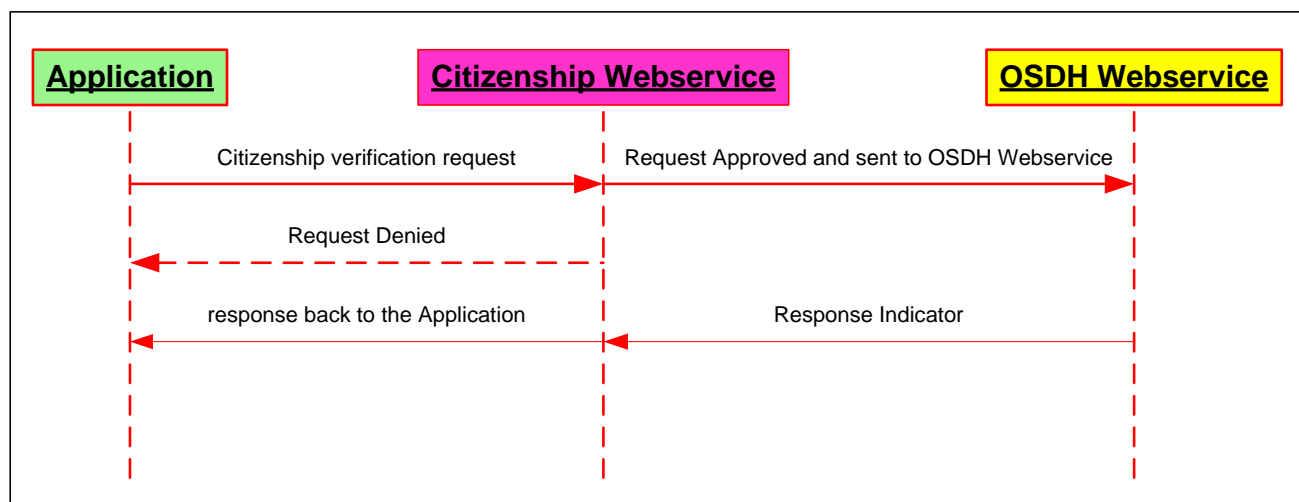


Figure 19: Sequence Diagram of Citizenship Verification Webservice

2.5.12 Data Definitions

Table 5 - Data Elements of Citizenship Verification Webservice gives the details of the data elements.

Table 5: Data Elements of Citizenship Verification Webservice

Source Container Type: The data source high-level object, class, or context of a set of data elements (e.g. person, vehicle, arrest).	Source Element: The source element is a specific data element that has been identified for use in the exchange.	Source Data Type: Data type of the source element.	Source Element Definition: The definition of the source element being mapped.	Description of the Source data element/container (Notes/Questions//any default values/optional, mandatory, etc.)
Person			<i>Contains the demographic information of a person</i>	
Person	FirstName	varchar (50) not null	First name of a Person	mandatory
Person	LastName	varchar (50)	Last Name of a Person	mandatory
Person	Gender	varchar (10)	Gender of a Person	mandatory
Person	Mother Maiden Name	varchar (50)	Mother's maiden name of a Person	mandatory
Person	Father Last Name	varchar (50)	Father's last name of a Person	optional
Person	Jurisdiction of Birth		Jurisdiction of Birth (County Name)	mandatory (Oklahoma Counties)
				It only has two values: MA NM
	US Citizenship Indicator	char(2)	This is the result code from OSDH	
	Certificate Number		Certificate Number	not null
Person Identifier			<i>Contains the criteria for identifying a person</i>	
Person Identifier	Person Number	char(3)	Identifying number of a person-unique	mandatory
Agency			<i>Name of the Agency that the request comes from</i>	
	Agency Name	varchar(25)	Agency name that the application comes from	mandatory
	Regional Office Name	varchar(25)	Office Name that the applicant applies from	mandatory
	Program Name			
	Application Name		Application that is used to enter information for the benefits	
	Division		Division that enters the applicant's information into the system	
	County Name			
	County Code			
	Agent Identifier		Worker number /User ID /or Clerk Number of the person entering the information on the application	mandatory

2.5.13 Security and Integrity

The security for this service needs to involve a Statewide Security that would make sure that only designated agencies will have access to the webservice (Authentication and authorization). It also needs to include an identity management that makes sure that only authorized agencies will be able to call the OSDH webservice. The data exchange has to be secure.

More information on Security such as Encryption of data, data access, data archival etc will be addressed by security policies and procedures. Recommendations for data security have been given in Section 1.5.1.

2.6 OKDHS Live Interoperability

2.6.1 Executive Summary

The AFS division of the Oklahoma Department of Human Services provides many services for the population of Oklahoma. Three of these are: SNAP (Food Benefits), Child Care Assistance, and Medical Assistance. The computer system that supports

AFS services is called PS2/FACS. PS2 is a mainframe IMS system that houses the data and has numerous online and batch IMS transactions that support the system. There is also some data stored in DB2. FACS is a PowerBuilder front end to the PS2 system that allows workers in the county offices to enter information into the PS2 system.

Several years ago, a system was acquired from the city of San Francisco and heavily customized for use by AFS clients to allow them to enter information for renewals and recertification on their cases and for clients known to the system (have had a case with AFS) to apply for benefits through a web application. Soon AFS will make the application process available to clients not known to the system. This system is called OKDHSLive and it collects the information from a client (or a worker assisting a client) required for a review, recertification, or application. At a very high level the description of OKDHSLive is as follows:

1. Data is collected from a client or worker through a series of web screens.
2. The data collected is saved in a SQL Server database.
3. Windows Services exist which look in the SQL Server database to see what has been submitted.
4. Data is sent from the SQL Server to various IMS transactions which update the appropriate information in the IMS and DB2 databases.
5. Depending on what data was updated, the case is automatically approved for renewal or recertification or sent to "Worker Review". Worker Review means that a worker needs to do something before the information can be approved. The reason for this could be something like documentation needs to be sent in, or something needs to be verified. In any case, once the information is sent to IMS, the case is handled by workers and the existing PS2/FACS system.

The example in this document meets a need that AFS would like to have when the application process is made available to clients not known to the system. AFS would like to allow entities outside OKDHS that collect similar information to send us the information they collect so we can submit an application for SNAP, Medical, or Child Care. The two examples they want to start with are the Food Bank in Tulsa and the Community Action Center in Tulsa. This process could work for any service agency whether a state agency or not if we can define what we expect them to send us and in what format. These agencies would need to have some kind of agreement with OKDHS/AFS so we wouldn't let just anyone collect information without knowing about it. This would require some kind of security to be sure that we know who is sending the data.

If an agency sends data, then we would put the data in the SQL Server database and set it up so that it appears to be in submitted state so the backend windows services will send it to the PS2/FACS system for processing.

We thought this could be an interoperable process because there are other state agencies that take applications for the types of services that they support. If we build a

statewide application that accepts this type of data, then the statewide application could send the information to any number of systems like OKDHSLive that are prepared to accept information from other agencies. We will need to think about how to format the data so that it can easily be changed as other applications are added that may have somewhat different data requirements and still have no impact on the existing applications that are already in the process. This example is only for OKDHSLive because we do not have any requirements for other agencies. Online enrollment with OHCA might be another candidate for this process.

2.6.2 Business Processes

The owner of the data exchange will be OMES-ISD. The Business Process Diagrams and Sequence Diagrams can be found on the OKDHSLive Interoperability IEPD Main Document (Appendix B-1-5).

2.6.3 Use Cases

Use Case Diagram of OKDHSLive Interoperability can be found on OKDHSLive Interoperability IEPD Main Document (Appendix B-1-5).

2.6.4 Requirements

1. Create a statewide webservice to accept data from any agency whether internal or external to accept data for applications to receive services provided by Oklahoma State Agencies.
 - a. The example given here is the Food Bank submitting data for OKDHSLive (a system that will allow users to apply for benefits offered by the AFS Unit of the Oklahoma Department of Human Services. The specific benefits in this example are Food Benefits, Medical Benefits, and Child Care Benefits. Other AFS benefits may be added later.
 - b. This state wide application will accept the data and perform security checks to determine where the information came from and if that entity has an agreement with the state that allows them to send application data and perform any other security or policy requirement checks.
 - c. After verifying security and policies, it invokes all of the web services in the state that exist for accepting Application information.
 - d. We will need to worry about other agencies data requirements as they are added because this document only addresses data needed by OKDHSLive.
 - e. A response is sent back to the caller with results such as security problems, success or failure of calling applications, responses from those applications, etc.
2. Create an OKDHSLive webservice that will accept data from the statewide webservice after the security has been verified.

- a. This webservice will perform additional security checks to verify that the sender has an agreement with OKDHS and that other security requirements are met. (Can/should this be done at the state level?).
 - b. After verifying security and policies, the webservice saves the data and generates necessary other data for the SQL Server database used by OKDHSLive. The data is stored in a manner expected by the OKDHSLive “backend”. (The details of this will be in the detail specifications for this web service).
 - c. The webservice will respond to the caller (the statewide application) with the results: whether a security problem exists, the data was successfully saved for OKDHSLive to process, or it wasn’t able to save the data.
 - d. We will need to determine how to handle the errors in case the data can’t be saved for some reason and how to recover, if possible.
 - e. After the SQL database is updated, the OKDHSLive “backend”, which is a series of windows services and web services, will notice that the data is there and submit it appropriately to the mainframe IMS system (PS2) for AFS. The application will most likely require an AFS worker to review it and contact the client for documentation and/or more information.
3. This looks like a good place for a messaging infrastructure (ESB?), where applications interested in picking up data could just grab an application request and process it.
 4. Security requirements and policies to be determined.
 5. Implement NIEM as a standard for data exchanges.
 6. Business Rules for data are in 2.6.12.

2.6.5 Web Services

N/A

2.6.6 Information Exchange

1. Any internal or external agency passes information to the statewide application webservice:
 - a. Information required to authenticate/authorize and any other requirement to meet policy at the statewide level.
 - b. Application information for various services being requested.
2. Statewide application webservice sends request to OKDHSLive web service:
 - a. Information required to authenticate/authorize and any other requirement to meet policy at the OKDHS/AFS level. (Should this be at the state level?)
 - b. Application information for various services being requested.
3. OKDHSLive sends reply back to statewide application web service:
 - a. Results
 - b. Error information, if any.
4. Statewide application webservice sends reply back to callers:
 - a. Results.

- b. Error information, if any.

2.6.7 Exchange Content Model

The Exchange Content Model is attached to Appendix B-1-5. It covers the data elements that are identified as the data required for an applicant to file for benefits.

2.6.8 Mapping Document

The Mapping Document is attached to Appendix B-1-5. It covers the data elements that are identified as the data required for an applicant to file for benefits.

2.6.9 XML Schemas

The XML Schemas are attached to Appendix B-1-5. It covers the data elements that are identified as the data required for an applicant to file for benefits.

2.6.10 Functional Allocation

The following operations take place for the statewide application web service:

1. Any internal or external agency:
 - a. Creates the request.
 - b. Calls statewide application web service.
 - c. Sends the request.
2. Statewide Application Webservice:
 - a. Checks required parameters for valid access to web service.
 - b. Grants/denies access to statewide application web service.
 - c. Calls OKDHSLive and all other web services that accept applications.
 - d. Sends information for the application.
 - e. Receives answer from OKDHSLive and others that were called.
 - f. Sends response to the calling agency.
3. OKDHSLive:
 - a. Receives request from statewide application web service.
 - b. Validates specific OKDHS/AFS security and policies
 - c. Grants/denies access to the OKDHSLive web service.
 - d. Stores data in SQL database for processing by OKDHSLive “backend”
 - e. Sends response to statewide application web service.

2.6.11 Data Transfer

The sequence diagram in **Figure 20 - Sequence Diagram of OKDHSLive Interoperability Webservice** shows the data transfer between the different entities involved in citizenship verification web service.

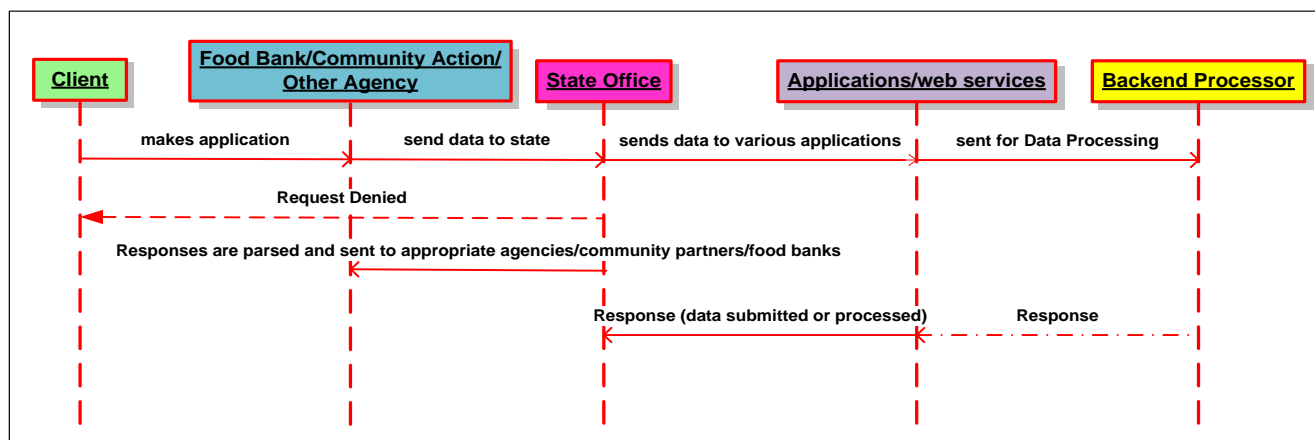


Figure 20: Sequence Diagram of OKDHSLive Interoperability Webservice

2.6.12 Data Definitions

The data definitions are given below in Table 6.

Table 6: Data Definitions for OKDHSLive Interoperability

Source Container Type: The data source high-level object, class, or context of a set of data elements (e.g., person, vehicle, arrest)	Source Element: The source element is a specific data element that has been identified for use in the exchange	Source Data Type: Data type of the source element	Source Element Definition: The definition of the source element being mapped	Description of the Source data element/container: (Notes/Questions/any default values/optional mandatory etc)
Case	ExtraAddressGuardianInd	String		
Case	ExtraAddressInd	String		
Case	EmailAddress	String		
CaseProperty	Value	Currency		
CaseProperty	Equity	Currency		
CaseProperty	LotOrAcres	String		
CaseProperty	PctOfOwnership	Integer	Percent of Ownership	
CasePrimaryPhone	AreaCode	Integer	Area Code of the primary household phone number	
CasePrimaryPhone	PhoneNumber	Integer	Phone Number of the primary household phone number	
CasePrimaryPhone	PhoneType	String	An indicator of the type of phone	CELL NEIGHBOR OTHER RELATIVE WORK PAGER FRIEND HOME
CaseSecondaryPhone	AreaCode	Integer	Area Code of the secondary household phone number	
CaseSecondaryPhone	PhoneNumber	Integer	Phone Number of the secondary household phone number	
CaseSecondaryPhone	PhoneType	String	An indicator of the type of phone	CELL NEIGHBOR OTHER RELATIVE WORK PAGER FRIEND HOME
CaseFindingAddress	Line1Address	String	Line1 of an address that someone can find such as a street address rather than a PO Box.	

90FQ0006-00 Oklahoma Interoperability Grant Project
National Information Exchange Model (NIEM) Analysis Roadmap, July 30, 2013

Source Container Type: The data source high-level object, class, or context of a set of data elements (e.g., person, vehicle, arrest)	Source Element: The source element is a specific data element that has been identified for use in the exchange	Source Data Type: Data type of the source element	Source Element Definition: The definition of the source element being mapped	Description of the Source data element/container: (Notes/Questions/any default values/optional mandatory etc)
Source Container Type:	Source Element:	Source Data Type:	Source Element Definition:	Description of the Source data element/container:
CaseFindingAddress	Line2Address	String	Line2 of an address that someone can find such as a street address rather than a PO Box.	
CaseFindingAddress	City	String	City of Finding Address	
CaseFindingAddress	State	String	State of Finding Address	Alabama Alaska Arizona Arkansas California Colorado Connecticut Delaware District Of Columbia Florida Georgia Hawaii Idaho Illinois Indiana Iowa Kansas Kentucky Louisiana Maine Maryland Massachusetts Michigan Minnesota Mississippi Missouri Montana Nebraska Nevada New Hampshire New Jersey New Mexico New York North Carolina North Dakota Ohio Oklahoma and default Oregon Pennsylvania Rhode Island South Carolina South Dakota Tennessee Texas Utah Vermont Virginia Washington West Virginia Wisconsin Wyoming
CaseFindingAddress	Zip code	5 or 9 digits	Zip code of Finding Address	5 digit zip code or 9 digit zip code
CaseMailingAddress	Line1Address	String	Line1 of the mailing address for the case	
CaseMailingAddress	Line2Address	String	Line2 of the mailing address for the case	
CaseMailingAddress	City	String	City of the mailing address for the case	

90FQ0006-00 Oklahoma Interoperability Grant Project
National Information Exchange Model (NIEM) Analysis Roadmap, July 30, 2013

Source Container Type: The data source high-level object, class, or context of a set of data elements (e.g., person, vehicle, arrest)	Source Element: The source element is a specific data element that has been identified for use in the exchange	Source Data Type: Data type of the source element	Source Element Definition: The definition of the source element being mapped	Description of the Source data element/container: (Notes/Questions/any default values/optional mandatory etc)
CaseMailingAddress	State	String	State of the mailing address for the case	Alabama Alaska Arizona Arkansas California Colorado Connecticut Delaware District Of Columbia Florida Georgia Hawaii Idaho Illinois Indiana Iowa Kansas Kentucky Louisiana Maine Maryland Massachusetts Michigan Minnesota Mississippi Missouri Montana Nebraska Nevada New Hampshire New Jersey New Mexico New York North Carolina North Dakota Ohio Oklahoma and default Oregon Pennsylvania Rhode Island South Carolina South Dakota Tennessee Texas Utah Vermont Virginia Washington West Virginia Wisconsin Wyoming
CaseMailingAddress	Zip code	5 or 9 digits	Zip code of the mailing address for the case	5 digit zip code or 9 digit zip code
Source Container Type:	Source Element:	Source Data Type:	Source Element Definition:	Description of the Source data element/container:
CaseMonthlyExpense	Amount	Currency	Amount of monthly expense for a certain type of expense	
CaseMonthlyExpense	Type	String	The type of monthly expense	Mortgage/House Payment Rent/Lease Taxes/Interest Insurance Rent/Lease Taxes/Interest Gas Electric Water/Sewer Phone
Person	LastName	String	Last Name of a person in the case	
Person	FirstName	String	First name of a person in the case	
Person	MiddleInitial	String	Middle Initial of a person in the case	
Person	Gender	String	Gender of the person	F - Female; M - Male
Person	Birthdate	Date	Birthdate of the person	
Person	MaritalStatus	String	Marital Status of the person	Single or Unknown, Divorced, Widowed, Married (whether living together or involuntarily separated Married but separated, whether legal or not) Married but involuntarily separated. (For example Mental Institutions, incarcerated, nursing home, etc.), Legally Separated, (ABD Benefit Type only) Eligible individual married and living with ineligible spouse included in afdc case and therefore not included in any A, B or D benefit type.

90FQ0006-00 Oklahoma Interoperability Grant Project
National Information Exchange Model (NIEM) Analysis Roadmap, July 30, 2013

Source Container Type: The data source high-level object, class, or context of a set of data elements (e.g., person, vehicle, arrest)	Source Element: The source element is a specific data element that has been identified for use in the exchange	Source Data Type: Data type of the source element	Source Element Definition: The definition of the source element being mapped	Description of the Source data element/container: (Notes/Questions/any default values/optional mandatory etc)
Person	PrimaryIndianTribe	String	Primary Indian Tribe of the person	Absentee Shawnee Alabama Apache Caddo Cherokee Cheyenne Arapaho Chickasaw Choctaw Citizen Potawatomi Comanche Delaware Nation Eastern Shawnee Fort Sill Apache Iowa Kaw Kialegee Kickapoo Kiowa Miami Modoc Muscogee Creek Osage Otoe-Missouria Ottawa Pawnee Peoria Ponca Other Quapaw Sac & Fox Seminole Seneca-Cayuga Shawnee Thlopthlocco Tonkawa United Keetoowah Band Wichita Wyandotte
Person	CitizenshipStatus	String	Citizenship Status of the person	Citizen, Eligible Alien, Undocumented Alien or Not Declared, Documented Alien
Person	Immunizations	String	Status of Immunizations for the person	Y = Current N = Not Current P = Pending G = Good Cause
Person	SocialSecurityNumber	String	Social Security Number of the Person	9 digits numeric; valid SSN
Person	KnowSSN	Bool	Indicator of whether the person knows their SSN or not	Yes; No
Person	SocialSecurityClaimNumber	String	Social Security Claim Number for the person	
Person	MigrantFarmWorker	Bool	Indicator of whether the person is a migrant farm worker or not	Yes; No
Source Container Type:	Source Element:	Source Data Type:	Source Element Definition:	Description of the Source data element/container:
Person	LivingArrangement	String	Living Arrangement of the person	Assisted Living, Foster Home, Group Home, State Mental Hospital for Persons 65 Years, Nursing Care, Own Residence Room and Board, Relative's Home, State School for the Mentally Retarded, Other
Person	AlienRegistrationNumber	String	Alien Registration Number for the Person	
Person	USEntryDate	Date	Entry Date of the person into the United States	
Person	ExpectedNumberOfBirths	Integer	Number of births expected by the person	
Person	ExpectedDateOfDelivery	Date	The date the person expects to deliver the births	
Person	PermDisabledInd	Bool	An indicator of whether the person is permanently disabled or not	Yes; No
Person	MothersFirstName	String	The first name of the person's mother	
Person	MothersMaidenName	String	The maiden name of the person's mother	

90FQ0006-00 Oklahoma Interoperability Grant Project
National Information Exchange Model (NIEM) Analysis Roadmap, July 30, 2013

Source Container Type: The data source high-level object, class, or context of a set of data elements (e.g., person, vehicle, arrest)	Source Element: The source element is a specific data element that has been identified for use in the exchange	Source Data Type: Data type of the source element	Source Element Definition: The definition of the source element being mapped	Description of the Source data element/container: (Notes/Questions/any default values/optional mandatory etc)
CasePerson	RelationshipToPayee	String	Relationship of the person to the payee of the case	Spouse, Payee, Child, Step Child, Grandchild, Brother/Sister, Step Brother/Step Sister, Niece/Nephew, Unrelated Adult, Unrelated Child, Cousin, Child or other dependent with guardian payee
CasePersonBenefit	BenefitType	String	A code indicating the type of benefit the person is applying for (or receiving)	Food stamps, Medical, Child Care
PersonUnearnedIncome	Type	String	A code indicating the type of unearned income	OASDI (Social Security), SSI, Veterans Benefits, Child Support, Tribal TANF, Alimony, Cash Assistance, Educational Aid, Disability, Retirement, Survivors, Railroad Retirement Board, Social Security or SSI/ SSP, Income deemed from parents to disabled child, Contribution from persons not included in this household, Dividends/ interest/ royalties, Subsidized Employment, Foster care payments, Grants for education or scholarships, Income considered only on Medical calculations, Indian, Champus, Aid and Attendance (VA), Loans for education, Military allotment, Income received from other household member, Pension or annuities (other than OASDI and VA), Rental income, Strike Pay/ Benefits, Unemployment Benefits, Public assistance grants, Worker's compensation, Insurance or legal settlement, Lump sum, Other
PersonUnearnedIncome	Amount	Currency	Amount of unearned income of this type	
PersonResource	Value	Currency	The monetary value of the resource	
Source Container Type:	Source Element:	Source Data Type:	Source Element Definition:	Description of the Source data element/container:
PersonResource	Type	String	The type of resource	Automobile or other motorized vehicle, Small business equipment, Savings which include cash, bank accounts, bonds, stocks, etc., Farm equipment, Exempt Burial Funds including those made irrevocable, Restricted Indian property, Life Estate that is not home property, Mineral rights, Insurance including burial policies, Prepaid burial funds, Real property, Livestock, Exempt trust, Other countable resources not described above, Included in estate recovery only.
PersonEmployment	EmployerName	String	The name of the person's employer	
PersonEmployment	GrossIncomeAmount	Currency	The monthly gross income of the person under this employer	

90FQ0006-00 Oklahoma Interoperability Grant Project
National Information Exchange Model (NIEM) Analysis Roadmap, July 30, 2013

Source Container Type: The data source high-level object, class, or context of a set of data elements (e.g., person, vehicle, arrest)	Source Element: The source element is a specific data element that has been identified for use in the exchange	Source Data Type: Data type of the source element	Source Element Definition: The definition of the source element being mapped	Description of the Source data element/container: (Notes/Questions/any default values/optional mandatory etc)
PersonEmployment	PayFrequency	String	The frequency of pay for this employer	Weekly, Every two weeks, Twice a month, Monthly
PersonEmployment	TipsAmount	Currency	The monthly amount of tips received under this employer	
PersonEmployment	BeginDate	Date	The date employment began	
PersonEmployment	FirstPaycheckDate	Date	The date the first full paycheck is expected	
PersonSelfEmployment	GrossMonthlyIncome	Currency	The average monthly income before business expenses and taxes	
PersonSelfEmployment	BusinessExpenses	Currency	The average monthly business expenses	
PersonSelfEmployment	BeginDate	Date	The date the self-employment began	
PersonMonthlyExpense	Amount	Currency	Amount of monthly expense for a certain type of expense	
PersonMonthlyExpense	Type	String	The type of monthly expense	Medical, Child Support, Child Care/Dependent Support
PersonRace	Hispanic	Bool	An indicator of whether the person is Hispanic or not	
PersonRace	Asian	Bool	An indicator of whether the person is Asian or not	
PersonRace	Black	Bool	An indicator of whether the person is Black or not	
PersonRace	White	Bool	An indicator of whether the person is White or not	
PersonRace	HawaiianPacific	Bool	An indicator of whether the person is Hawaiian/Pacific Islander or not	
PersonRace	AmericanIndianAlaskaNative	Bool	An indicator of whether the person is American Indian/Alaska Native or not	
PersonEducation	EducationLevel	String	Education Level of the Person	None, 1st Grade, 2nd Grade, 3rd Grade, 4th Grade, 5th Grade, 6th Grade, 7th Grade, 8th Grade, 9th Grade, 10th Grade, 11th Grade, 12th Grade, GED, Vocational School, Some College, Completed College, Unknown
PersonEducation	NameOfSchool	String	The name of the school the student is attending (if any)	
Source Container Type:	Source Element:	Source Data Type:	Source Element Definition:	Description of the Source data element/container:
PersonEducation	Attending	Bool	An indicator of whether the student is in school or not	Yes; No
PersonEducation	StudentStatus	String	an indicator of whether the student is full time or part time	Full time; Part time
PersonProvider	Name	String	The name of the provider	
PersonProvider	Type	string	The type of provider	Long Term Care; Child Care
PersonProvider	FirstDayAttended	date	The first day of attendance with this provider	
PersonProviderAddress	Line1Address	String	Line 1 of the mailing address	

90FQ0006-00 Oklahoma Interoperability Grant Project
National Information Exchange Model (NIEM) Analysis Roadmap, July 30, 2013

Source Container Type: The data source high-level object, class, or context of a set of data elements (e.g., person, vehicle, arrest)	Source Element: The source element is a specific data element that has been identified for use in the exchange	Source Data Type: Data type of the source element	Source Element Definition: The definition of the source element being mapped	Description of the Source data element/container: (Notes/Questions/any default values/optional mandatory etc)
PersonProviderAddress	Line2Address	String	Line 2 of the mailing address	
PersonProviderAddress	City	String	City of the mailing address	
PersonProviderAddress	State	String	State of the mailing address	Alabama Alaska Arizona Arkansas California Colorado Connecticut Delaware District Of Columbia Florida Georgia Hawaii Idaho Illinois Indiana Iowa Kansas Kentucky Louisiana Maine Maryland Massachusetts Michigan Minnesota Mississippi Missouri Montana Nebraska Nevada New Hampshire New Jersey New Mexico New York North Carolina North Dakota Ohio Oklahoma and default Oregon Pennsylvania Rhode Island South Carolina South Dakota Tennessee Texas Utah Vermont Virginia Washington West Virginia Wisconsin Wyoming
PersonProviderAddress	Zip code	5 or 9 digits	zip code of the mailing address	5 digit zip code or 9 digit zip code
PersonProviderPhone	AreaCode	Integer	Area Code of the provider	
PersonProviderPhone	PhoneNumber	Integer	Phone Number of the provider	
PersonProviderPhone	PhoneType	String	An indicator of the type of phone	CELL NEIGHBOR OTHER RELATIVE WORK PAGER FRIEND HOME
PersonChildSupportQuestions	Question	string	A question that must be answered about child support cooperation	I have read and understand Child Support Services and Responsibilities, I have read and understand Cooperation Agreement and Request for Good Cause, I understand the above and agree to cooperate in obtaining child support. I wish to claim a "good cause" exemption from cooperating in pursuing child support, I wish to request Medical Only Child Support Assistance. (not sure about this one)
Source Container Type:	Source Element:	Source Data Type:	Source Element Definition:	Description of the Source data element/container:
PersonChildSupportQuestions	Answer	bool	A yes/no answer to the question	Yes; No
AbsentParent	LastName	String	Last Name of an absent parent to a person in the case	
AbsentParent	FirstName	String	First Name of an absent parent to a person in the case	

90FQ0006-00 Oklahoma Interoperability Grant Project
National Information Exchange Model (NIEM) Analysis Roadmap, July 30, 2013

Source Container Type: The data source high-level object, class, or context of a set of data elements (e.g., person, vehicle, arrest)	Source Element: The source element is a specific data element that has been identified for use in the exchange	Source Data Type: Data type of the source element	Source Element Definition: The definition of the source element being mapped	Description of the Source data element/container: (Notes/Questions/any default values/optional mandatory etc)
AbsentParent	MiddleInitial	String	Middle Name of an absent parent to a person in the case	
AbsentParent	Gender	String	Gender of the person	F - Female; M - Male
AbsentParent	BirthDate	Date	Birthdate of the person	
AbsentParent	DeathDate	Date	Date of death of the person	
AbsentParent	PrimaryIndianTribe	String	Primary Indian Tribe of the person	Absentee Shawnee Alabama Apache Caddo Cherokee Cheyenne Arapaho Chickasaw Choctaw Citizen Potawatomi Commanche Delaware Nation Eastern Shawnee Fort Sill Apache Iowa Kaw Kialegee Kickapoo Kiowa Miami Modoc Muscogee Creek Osage Otoe-Missouria Ottawa Pawnee Peoria Ponca Other Quapaw Sac & Fox Seminole Seneca-Cayuga Shawnee Thlophlocco Tonkawa United Keetoowah Band of Cherokee Wichita Wyandotte
AbsentParent	SocialSecurityNumber	String	Social Security Number of the Person	9 digits numeric; valid SSN
AbsentParentAddress	Line1Address	String	Line 1 of the mailing address	
AbsentParentAddress	Line2Address	String	Line 2 of the mailing address	
AbsentParentAddress	City	String	City of the mailing address	
AbsentParentAddress	State	String	State of the mailing address	Alabama Alaska Arizona Arkansas California Colorado Connecticut Delaware District Of Columbia Florida Georgia Hawaii Idaho Illinois Indiana Iowa Kansas Kentucky Louisiana Maine Maryland Massachusetts Michigan Minnesota Mississippi Missouri Montana Nebraska Nevada New Hampshire New Jersey New Mexico New York North Carolina North Dakota Ohio Oklahoma and default Oregon Pennsylvania Rhode Island South Carolina South Dakota Tennessee Texas Utah Vermont Virginia Washington West Virginia Wisconsin Wyoming
Source Container Type:	Source Element:	Source Data Type:	Source Element Definition:	Description of the Source data element/container:
AbsentParentAddress	Zip code	5 or 9 digits	zip code of the mailing address	5 digit zip code or 9 digit zip code

90FQ0006-00 Oklahoma Interoperability Grant Project
National Information Exchange Model (NIEM) Analysis Roadmap, July 30, 2013

Source Container Type: The data source high-level object, class, or context of a set of data elements (e.g., person, vehicle, arrest)	Source Element: The source element is a specific data element that has been identified for use in the exchange	Source Data Type: Data type of the source element	Source Element Definition: The definition of the source element being mapped	Description of the Source data element/container: (Notes/Questions/any default values/optional mandatory etc)	
AbsentParentRace	Hispanic	Bool	An indicator of whether the person is Hispanic or not		
AbsentParentRace	Asian	Bool	An indicator of whether the person is Asian or not		
AbsentParentRace	Black	Bool	An indicator of whether the person is Black or not		
AbsentParentRace	White	Bool	An indicator of whether the person is White or not		
AbsentParentRace	HawaiianPacific	Bool	An indicator of whether the person is Hawaiian/Pacific Islander or not		
AbsentParentRace	AmericanIndianAlaskaNative	Bool	An indicator of whether the person is American Indian/Alaska Native or not		
AbsentParentCasePerson	The person or persons in the case that the absent parent is responsible for				
ThirdPartyLiability	PolicyNumber	String	The policy number of the insurance policy		
ThirdPartyLiability	InsuranceType	String	The type of insurance	Hospital, Hospital/Physician, Major Medical and default, Accident Only, Prescription Drugs, Medicare Supplement - Part B, cancer and/or Dreaded Disease, Nursing Care Only, Ambulance, Dental,	Hospitalization/Surgical Care, HMO (Health Maintenance Organization), Managed Health Care (Tulsa Only), Vision Care, Medicare Supplement - Part A, NTMC, Medicare Supplement - Both Parts A & B
ThirdPartyLiability	BeginningCoverageDate	Date	The date coverage began		
ThirdPartyLiability	EndingCoverageDate	Date	The date coverage ends		
ThirdPartyLiability	PolicyHolderIndicator	String	an indicator of who is the policy holder	Payee in the case, Spouse in the case, Father, Mother,	Absent Parent, Step-parent, Other
ThirdPartyLiability	PolicyHolderLastName	String	The last name of the policy holder if not provided on the case (policy holder indicator not payee, spouse or absent parent)		
ThirdPartyLiability	policyholderFirstName	String	The first name of the policy holder if not provided on the case (policy holder indicator not payee, spouse or absent parent)		
ThirdPartyLiability	policyholderMiddleName	String	The middle name of the policy holder if not provided on the case (policy holder indicator not payee, spouse or absent parent)		
TPLInsuranceCompany	Name	string	Name of the Insurance Company	See attached Excel file	
TPLInsuranceCompanyAddress	Line1Address	String	Line 1 of the mailing address	See attached Excel file	
TPLInsuranceCompanyAddress	Line2Address	String	Line 2 of the mailing address	See attached Excel file	
TPLInsuranceCompanyAddress	City	String	City of the mailing address	See attached Excel file	

90FQ0006-00 Oklahoma Interoperability Grant Project
National Information Exchange Model (NIEM) Analysis Roadmap, July 30, 2013

Source Container Type: The data source high-level object, class, or context of a set of data elements (e.g., person, vehicle, arrest)	Source Element: The source element is a specific data element that has been identified for use in the exchange	Source Data Type: Data type of the source element	Source Element Definition: The definition of the source element being mapped	Description of the Source data element/container: (Notes/Questions/any default values/optional mandatory etc)
Source Container Type:	Source Element:	Source Data Type:	Source Element Definition:	Description of the Source data element/container: Source Container Type:
TPLInsuranceCompanyAddress	State	String	State of the mailing address	Alabama Alaska Arizona Arkansas California Colorado Connecticut Delaware District Of Columbia Florida Georgia Hawaii Idaho Illinois Indiana Iowa Kansas Kentucky Louisiana Maine Maryland Massachusetts Michigan Minnesota Mississippi Missouri Montana Nebraska Nevada New Hampshire New Jersey New Mexico New York North Carolina North Dakota Ohio Oklahoma and default Oregon Pennsylvania Rhode Island South Carolina South Dakota Tennessee Texas Utah Vermont Virginia Washington West Virginia Wisconsin Wyoming
TPLInsuranceCompanyAddress	Zip code	5 or 9 digits	zip code of the mailing address	See attached Excel file. 5 digit zip code or 9 digit zip code
TPLCasePerson	The person in the case who is the policy holder			
TPLAbsentParent	The absent parent in the case who is the policy holder			
ChildCare	NumberOfChildrenReceiving	Integer	The number of children in the case receiving child care	
ChildCare	CaretakerCommuteTime	Integer	Caretaker commute time in minutes	
ChildCareWorkSchedule	DayOfWeek	String	Sunday Thursday Monday Friday Tuesday Saturday Wednesday	
ChildCareWorkSchedule	StartTime	Time	The time of day the caretaker begins work for the day of the week indicated	
ChildCareWorkSchedule	EndTime	Time	The time of day the caretaker ends work for the day of the week indicated	

2.6.13 Security and Integrity

The security for this service needs to involve a Statewide Security.

Information on Security such as encryption of data, data access, data archival etc. will be addressed by security policies and procedures. Recommendations for data security have been given in Section 1.5.1.2.

2.7 OHCA online enrollment for SoonerCare Medicaid Eligibility and OCSS referrals

Due to time constraints, for this process, only preliminary analysis of the AS-IS was done.

2.7.1 Executive Summary

OHCA is the designated Oklahoma Medicaid Agency. Applicant contacts OHCA or partner agency to apply for SoonerCare. Applicant can use the following methods for application.

1. Customer Log-in (Home View)
2. OKDHS-FACS (Interview Process)
3. OSDH (Interview Process)
4. Partner Agency (Agency View)
5. OHCA Helpdesk (Paper Application)
6. OCSS (Agency View – rarely)

OHCA certifies the case and information is sent from OHCA to OCSS in a batch file nightly. OSIS evaluates batch file builds referrals on appropriate OHCA cases. Information is displayed on RFLI for appropriate OCSS office or updated to OCSS case if existing FGN is found in OSIS.

- During information review process, OCSS staff either:
 - ✓ Builds OCSS case and cross references it to the OHCA case.
 - ✓ Moves the referral to another OCSS office.
 - ✓ Deletes the referral. This is accompanied by a change in the level of OCSS services listed on Agency View to avoid the referral being received again.
- During update to OCSS existing case, OSIS updates information on an existing OCSS FGN. Examples are a change in case type or demographic updates.

OCSS nightly batch file to OHCA that could be Good Cause, Non-coop or case status information.

Good cause – If the referral indicated the applicant is requesting Good Cause for refusal to cooperate with OCSS, the OCSS staff member builds the case in OSIS with the pending good cause indicator. OSIS generates a letter to the applicant to inform him/her their request for Good cause has been received and that they need to provide documentation in support of their request. If they do not respond, the case is marked as

the applicant intends to cooperate with OCSS. If they respond and provide appropriate documentation and OCSS determines Good Cause exists, the OCSS case is closed.

Non Cooperation – If OCSS finds an applicant who is a parent is not cooperating with OCSS and their cooperation is necessary for OCSS to take the next step on a case, the OCSS case is marked as non-cooperation. This information is sent to OHCA in the nightly download. The OHCA system will review the information about the applicant to determine if they are in a protected mode (e.g. pregnant etc.). If not, the OHCA removes the benefits from the applicant. The benefits for the child remain active. If the applicant cooperated with OCSS, the cooperation code is updated and that information is sent to OHCA in the nightly download. If an applicant who has a code indicating non-cooperation applies for OHCA benefits, the OHCA system will not certify the individual. An edit indicating the applicant is not cooperating with OCSS is displayed.

Case Status Updates – Includes case status updates on payee cooperation status, Medicaid eligibility changes, and insurance coverage changes.

Case closures – OCSS must pursue child support on cases where the family is receiving Medicaid assistance except for certain limited circumstances such as:

- Only the children are receiving Medicaid and the applicant has declined OCSS services.
- Only the children are receiving Medicaid and the applicant is not cooperating when that person's cooperation is required for the next step on the case to the applicant cannot be located.
- There is no deprivation for the child (intact family).
- The child is 'deemed eligible'.
- Good cause for refusal to cooperate has been determined.

There's a weekly batch file for insurance that is sent from OHCA to OCSS and from OCSS to OHCA. Insurance Information related to Medicaid recipients is exchanged. The information exchanged includes the carrier, type of coverage, coverage dates and policy holder information for each member. Logistics at both ends are in place to make decisions whether to update information at either end or not with the information.

Cash Medical support collections are sent to OHCA on a monthly basis.

Collecting cash medical support – Some child support orders require a parent to pay cash medical support in lieu of enrolling a child in insurance. When the family is receiving Medicaid, the cash medical support is assigned to the State of Oklahoma. Those amounts are forwarded to OHCA when collected by OCSS. These are sent as a monthly batch from one agency to the other.

2.7.2 Requirements

1. Real time data exchange
2. Implementation of NIEM as a standard for data exchange

3. All family member information should include the parent of the children who is absent from the home.

3 ADDITIONAL INFORMATION

3.1 Referenced Documents

In the event of conflict between these reference documents and contents of this document, contents of this document shall be considered a superseding requirement.

<http://semanticcommunity.info/NIEM> Semantic Community

Justin Stkervetz, Cory Casanave, Mark Kindl NIEM – UML Profile. March 2012 OMG Meeting

Cory Casanave. A Model Driven Approach to Information Sharing with the National Information Exchange Model (NIEM) and UML – Enterprise Data World, April 29-May 3, 2012

Paul Wormeli, Jim Pingel. NIEM in Action: Roadmap to Successful Standards-Based Information-Sharing. A Presentation to the IACP-LIEM Conference, May 9, 2008, Nashville, TN.

ACF Interoperability Toolkit 2012.

NIEM Town Hall Transcript, February 2013.

www.niem.gov. National Information Exchange Model (NIEM) User Guide. Volume 1.

<http://apps.ncsc.org/niem/> NIEM Wayfarer v2.1

<http://tools.niem.gov/niemtools/ssgt/index.iepd>. Subset Schema Generation Tool (SSGT)

NIEM Technical Architecture Committee (NTAC). National Information Exchange Models Naming and Design Rules v1.3.

T. Carlson. Consolidated NIEM Training Slides.

<http://www.epa.gov/oei/symposium/2010/roy.pdf>. Technical Introduction to NIEM

<https://www.niem.gov/technical/Pages/niem.aspx>. Technical NIEM

<http://reference.niem.gov/niem/specification/naming-and-design-rules/1.3/niem-ndr-1.3.pdf>. Naming and Design Rules (NDR) v. 1.3

<https://www.niem.gov/communities/Pages/communities.aspx>. NIEM Communities and Domains

<https://www.niem.gov/technical/model-package-description/Pages/iepd-lifecycle.aspx>. IEPD Lifecycle, NIEM 2.1

4 ACRONYMS

Acronym	Definition
ACA	Affordable Care Act
ACF	Administration for Children and Families
AFS	Adult and Family Services
BPM	Business Process Management
BRIDG	Biomedical Research Integrated Domain Group
CAM	Content Assembly Message
CMS	Medicare and Medicaid Services
COI	Community of Interest
COTS	Commercial Off the Shelf
CWS	Child Welfare System
DHS	Department of Homeland Security
DOJ	Department of Justice
ESB	Enterprise Service Bus
ESC	Executive Steering Committee
FEA	Federal Enterprise Architecture
FHA	Federal Health Architecture
FHIM	Federal Health Information Model
FHIMS	Federal Health Interoperability Modeling and Standards
FIPS	Federal Information Processing Standards
FSAM	Federal Segment Architecture Methodology
GFIPM	Global Federated Identity and Privilege Management
HHS	Health and Human Services
HS	Human Services
HSA	Human Services Application
IMS	Information Management Systems
IEPD	Information Exchange Package Documentation
IO	Insure Oklahoma
IRS	Internal Revenue Service
ISO	International Organization for Standardization
IT	Information Technology
JIEM	Justice Information Exchange Model
MDA	Model Driven Architecture
MITA	Medicaid Information Technology Architecture
MMIS	Medicaid Management Information System
MOU	Memorandum of Agreements

Acronym	Definition
MPD	Model Package Description
NBAC	NIEM Business Architecture Committee
NC&OC	NIEM Communications and Outreach Committee
NDR	Naming and Design Rules
NEP	NIEM Engagement Process
NHSIA	National Human Services Interoperability Architecture
NIEM	National Information Exchange Model
NIST SP	National Institute of Standards and Technology Special Publication
NTAC	NIEM Technical Architecture Committee
NTAP	NIEM Tools Advisory Panel
OCSS	Oklahoma Child Support Services
OHCA	Oklahoma Health Care Authority
OKDHS	Oklahoma Department of Human Services
OMES	Office of Management and Enterprise Services
OMG	Object Management Group
ONC	Office of the National Coordinator for Health IT
OSDH	Oklahoma State Department of Health
OSIS	Oklahoma Support Information System
PII	Personal Identifying Information
PIM	Platform Independent Model
PMO	Program Management Office
PS2	A mainframe IMS system
PSM	Platform Specific Model
RIM	Reference Information Model
SDOs	Standards Development Organizations
SLA	Service Level Agreements
SME	Subject Matter Expert
SOA	Service Oriented Architecture
SOAP	Simple Object Access Protocol
SSA	Social Security Administration
SSGT	Schema Subset Generation Tool
UML	Unified Modeling Language
VHA	Veterans Health Administration
WIC	Women, Infants and Children
XML	eXtensible Markup Language
XSD	XML Schema Definition

APPENDICES

To review the following referenced Appendices: A-1-1, B-1-2, B-1-3, C-1-1, C-1-3, and C-1-4, please refer to the accompanying file named: [Oklahoma 90FQ0006 NIEM Analysis – Version 1.0_ Appendices.zip](#)

Contents of this ZIP file include the following:

- **A-1-1:** AS-IS List of Eligibility and Enrollment Interfaces & Data Elements.xlsx
- **B-1-2:** OHCA Agreement.pdf
- **B-1-3:** OSDH Agreement.pdf
- **C-1-1:** NIEM Mapping Document _Citizenship.xlsx
- **C-1-3:** OKDHSLive Web Service for Outside Agencies.vsd
- **C-1-4:** NIEM Mapping Document_OKDHSLiveInteroperability.xlsx

APPENDIX B-1-4: Citizenship Verification IEPD Definition

Metadata

IEPD Creation Date	June 2013
IEPD Version	1.0
NIEM Version	v2.1 with domain updates
Last Revision Date	June 2013
Maturity	Entry Level
Document Namespace	

Participants

Name	Organization
Matthew Conley	Adult and Family Services
Helen Goulden	Adult and Family Services
Becky Rimmer	OMES-ISD
Karen Philbin	OMES-ISD
Paula Printup-Porter	Oklahoma Healthcare Authority
William Holmberg	Oklahoma State Department of Health
Jeff Carlisle	Oklahoma State Department of Health
Mark Boltz	Northrop Grumman
Adolph Maren	Oklahoma Healthcare Authority
Brigido Espinosa	Oklahoma Healthcare Authority
Nicole Altobello	Oklahoma Healthcare Authority
Jeff Parsells	Northrop Grumman
Morris Feigel	Northrop Grumman
Sumita Pokharel	OMES-ISD
Heather Johnson	Northrop Grumman

1 INTRODUCTION

A State or Federal mandate requires an applicant for a particular benefit (e.g. Food Stamps) to prove that they are a citizen. The purpose of this document is to describe the contents of the Citizenship Verification Information Exchange Package. The document will map the existing exchange information to the NIEM data elements and will identify the extensions/subset schemas required.

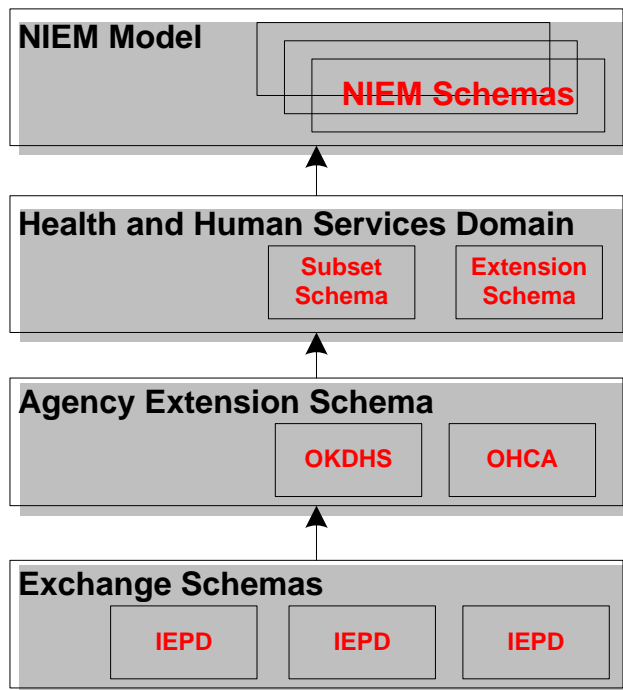


Figure 21: IEPD Schema Hierarchy

The diagram above illustrates the hierarchy of the schemas included inside of the IEPD. The purpose of the hierarchy diagram is also to define the acceptable inheritance scenarios.

As illustrated in *Figure 1 - IEPD Schema Hierarchy* each of the schemas fits within one of the following categories:

Official NIEM Schemas

These will be a subset of schemas and represent a subset of the NIEM 2.0 standard schema, which will be generated using the Schema Subset Generation Tool (SSGT) available on the NIEM Tools website. The schemas in this category are maintained and exposed by the NIEM organization. The tools that will be utilized for searching existing schemas in NIEM are: SSGT and NIEM Wayfarer.

Health and Human Services Domain Exchange Model

The Health and Human Services (HHS) domain is currently in the works. The IEPDs created by this domain will be maintained and exposed by the NIEM Human Services Domain Governance Committee.

Oklahoma Specific Schemas

These are specific schemas that will need to be grouped for data types and elements that pertain to a specific Oklahoma agency, and thus may be shared by IEPDs created by that agency, but not shared outside the agency. These schemas will be created, maintained and exposed by the agencies.

IEPD Specific Schemas

The data types and elements contained within these schemas are specific to the IEPD in which they exist and are not expected to be shared outside of the IEPD. As such, the schemas within this category are maintained within the individual IEPD and are not exposed outside of that scope.

Defining and using IEPD Specific data elements should be minimized since they cannot be leveraged across IEPDs.

There are two types of schemas within the IEPD. The exchange schema describes the root node of the document that is used within the actual exchange of data and any other elements that are specific to that exchange. The extension schema contains data types and elements that can be shared across multiple exchange schemas within the same IEPD.

2 METHODOLOGY

Business processes, requirements and web services were first worked upon. The NIEM IEPD lifecycle methodology was used to generate IEPD Main Documents and IEPD artifacts. The details are given below:

1. Identify the Business Process.
2. Create:
 - a. Business Process Diagrams
 - b. Sequence Diagrams
 - c. Use Case
3. Identify Business Rules and Requirements at the data element level.
4. Conduct Stakeholder interviews for the identified interfaces and get their agreement on the TO-BE and get all required information from them.
5. Create Exchange Content Model, UML Diagrams – Mapping to NIEM objects/elements.
6. Create Schemas (Constraint, extension) based on our findings while comparing with NIEM schemas.
7. Create IEPD main document.

8. Generate other artifacts for the IEPD.

3 CITIZENSHIP VERIFICATION PROCESS OVERVIEW

A state or Federal mandate required an applicant for a particular benefit (e.g. Food Stamps) to prove they are a citizen. Currently, since DHS has Federal SSA and SSI information, OKDHS uses the determination of the Federal system to verify citizenship: that if a person is a citizen in the Federal database, then the State would consider that person a citizen too. So an initial automated search is performed on the Federal data. If verified that a person was not a citizen on the Federal database, for Medicaid, an additional check against OSDH data is done.

If a person's citizenship is verified either with the Feds or with OSDH, OKDHS database is updated with an appropriate flag. If no verification is found a notice is sent to the applicant to provide proof of the citizenship.

Currently, the Oklahoma Health Care Authority (OHCA) utilizes three methods to verify citizenship for their applicants. The primary method is the data match against the Social Security Administration-SOLQI service, this is a real-time verification. The second method is a manual data match against the Department of Homeland Security-VIS system.

Finally, OHCA uses a daily batch process to exchange information with the Oklahoma State Department of Health (OSDH); the first batch job sends a request with all applicants who have declared to be born in Oklahoma and whose citizenship has not been verified through other means. The second batch job processes the verifications OSDH returns to OHCA. The criteria and elements OHCA considers to create the request are:

- Member's citizenship must not be previously verified
- The member declared he/she was born in Oklahoma
- The member must be eligible for other program than Mental Health
- Only verified Social Security Numbers are included in the request

Once the request file is created, it is FTP-transferred to OSDH for processing. The response file from OSDH then is processed by OHCA and the database is updated accordingly with the correspondent verifications.

OHCA maintains a life-time verification table where it keeps the citizenship verification records. Additionally, the document request for citizenship created when the application is submitted is keyed as met when someone's citizenship gets verified.

The release of the new Citizenship Verification Process, as depicted in *Figure 2: Citizenship Verification Process*, for citizenship verification will allow the workers/clients to verify citizenship with Oklahoma State Department of Health real time so that the answer is

instantaneous instead of them having to go through a wait period to get an answer back. It will also give the flexibility to verify citizenship for any agency that has an agreement/contract signed to use the Citizenship Verification Webservice.

Considerations for the service (web service):

- Any Agency can verify citizenship with either the Feds or OSDH
- If it's a two-step process the Agency will call the Feds Service first and Citizenship Verification Webservice after that.
- Only designated Agencies (as specified in the contract/agreement) will be able to access the citizenship verification webservice.
- The output would be an indicator whether the citizenship was verified/not verified.
- The logic of whether to call just the Feds Webservice or OSDH Webservice or both the webservices for citizenship verification is handled by the application calling the webservice (That would handle the cases for SNAP/TANF/Childcare/Medicaid taking different paths for citizenship verification for OKDHS).
- All processes dependent on the response from citizenship verification webservice will be handled by the application.

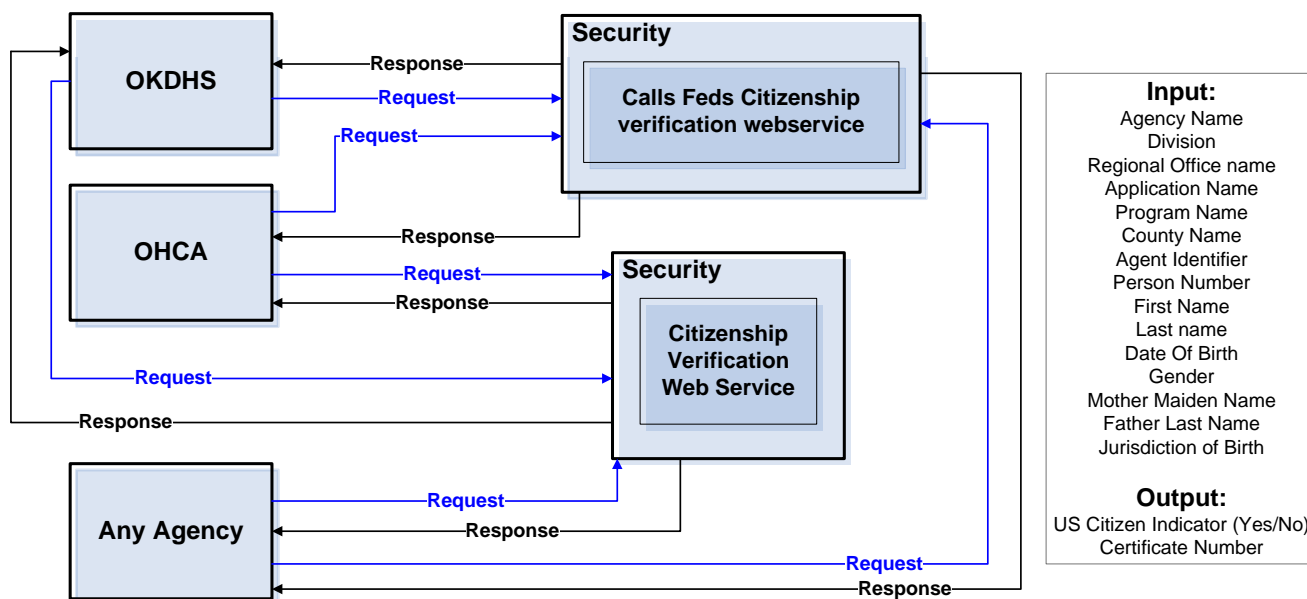


Figure 22: Citizenship Verification Process

3.1 Data Requirements to Citizenship Verification Webservice (Input)

Authentication Parameters for Agency/Application: The authentication parameters are identified below based on the OSDH requirement and preliminary study of the parameters required to identify the application within an agency.

- Agency Name – OSDH Requirement
- Regional Office Name – OSDH requirement

- Agent Identifier – OSDH requirement
- Division Name
- Program Name
- Application Name
- County Name

Information of the applicant for Citizenship Verification:

- Person Number
- First Name
- Last Name
- Date of Birth
- Gender
- Mother Maiden Name
- Father Last Name
- Jurisdiction of Birth

3.2 Data Requirements (Output)

- U.S. Citizen Indicator
- Certificate Number – OSDH requirement

The Citizenship Verification Process with OSDH is outlined in the diagram below (*Figure 3 - Web Service for citizenship verification and the detailed process*). Citizenship Verification Process will involve statewide security to authenticate an agency.

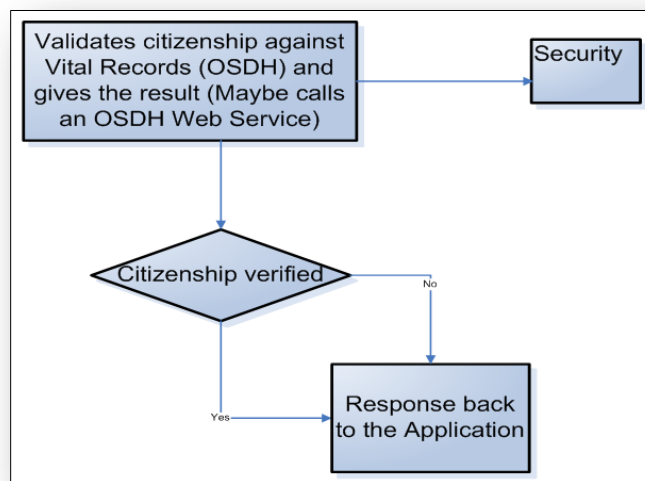


Figure 23: Web Service for citizenship verification and the detailed process

The diagram depicted below in *Figure 4 - Citizenship Verification Sequence Diagram* is the sequence diagram and shows the message flow between different entities involved in the data exchange.

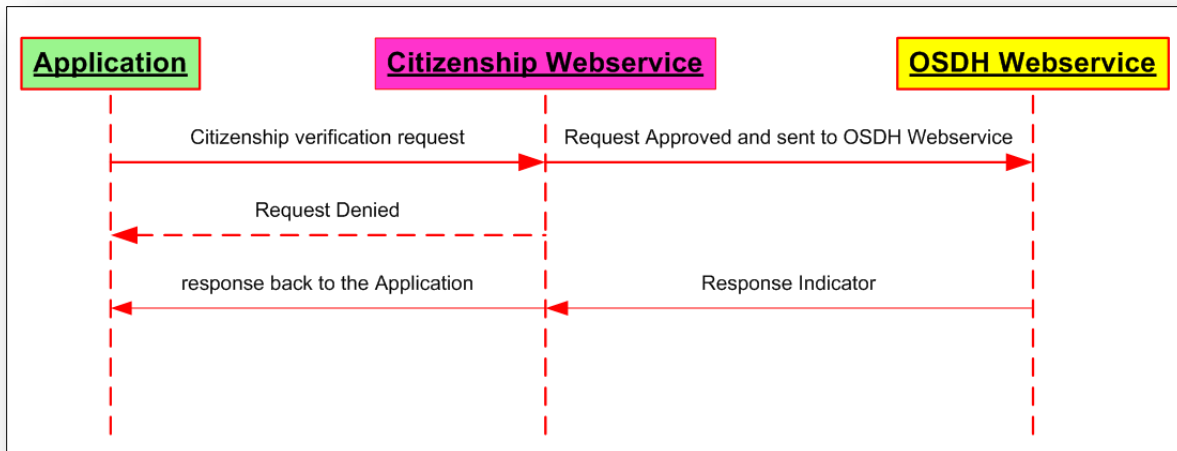


Figure 24: Citizenship verification Sequence Diagram

Use Case for Citizenship Verification process is outlined in *Figure 5: Citizenship Verification Process Use Case Diagram*.

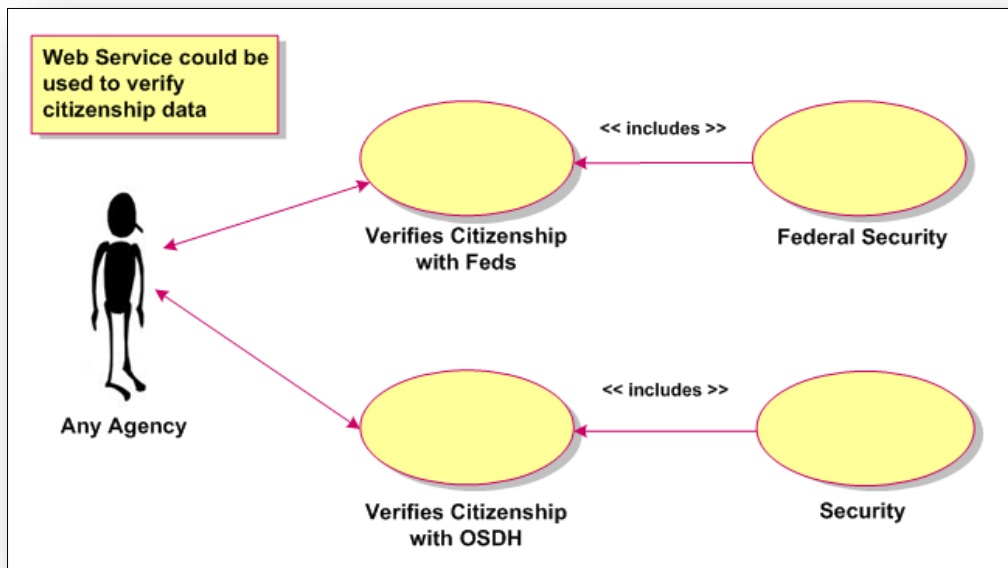


Figure 25: Citizenship Verification Process Use Case Diagram

The Use Case Diagram for the Citizenship Verification Webservice with OSDH is given below in *Figure 6 - Citizenship Verification Webservice Use Case Diagram*.

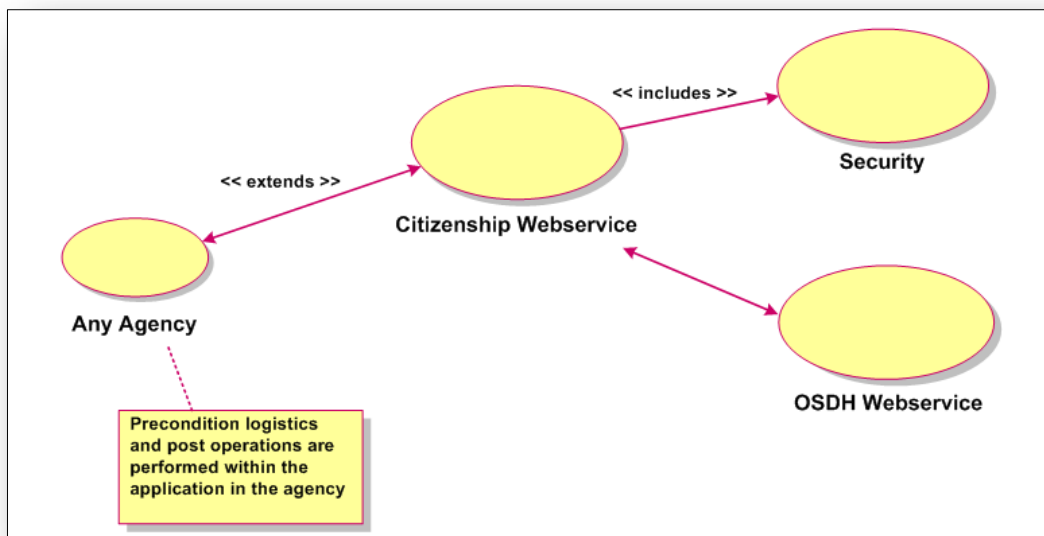


Figure 26: Citizenship Verification Webservice Use Case Diagram

4 BUSINESS RULES AND REQUIREMENTS

7. Citizenship verification with Feds (The details of this verification will not be covered in this paper)
8. Build a service for Citizenship Verification with the Oklahoma State Department of Health
9. Oklahoma State Legislature §63-5009. Development of managed care system - Administration of Oklahoma Medicaid Program.
10. Real time citizenship data exchange
11. Implement NIEM as a standard for data exchanges

Data Governance at a high level:

- Owner – OMES-ISD
- Record Create/Update/Maintain – OMES-ISD (application??)
- Read Information from database – Only OMES-ISD
- Go-To for data management disagreements – OMES-ISD
- Define Access Procedures – OMES-ISD
- Verify Compliance to Policies/Mandates – OMES-ISD/Other Agencies
- Documentation – OMES-ISD
- Maintain Data Quality – OMES-ISD

5 EXCHANGE CONTENT MODEL

The Exchange Content Model diagram for Citizenship verification Webservice is given below in *Figure 7 - Citizenship Verification Webservice Exchange Content Model*. The NIEM mapping document is attached as an *Appendix C-1-1*.

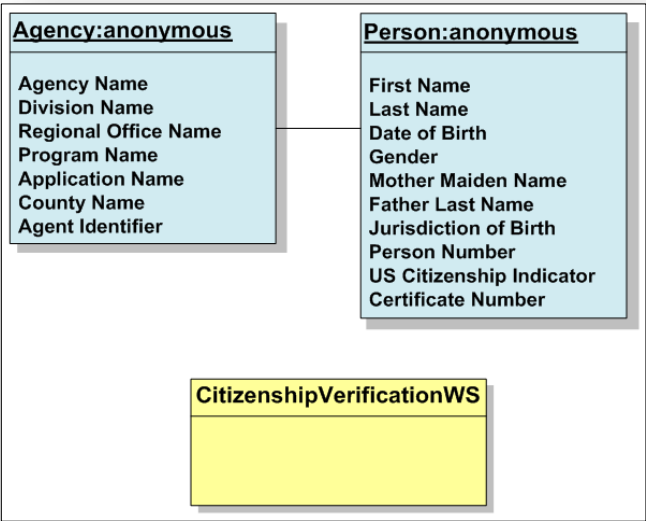


Figure 27: Citizenship Verification Webservice Exchange Content Model

6 IEPD ARTIFACTS

Business Process Diagram
Use Case Diagram
Sequence Diagram
Exchange Content Model
CMT mapping Document
Subset Schema
Want list

APPENDIX B-1-5: OKDHSLive Interoperability IEPD Main Document

Metadata

IEPD Creation Date	June 2013
IEPD Version	1.0
NIEM Version	v2.1 with domain updates
Last Revision Date	June 2013
Maturity	Entry Level
Document Namespace	

Participants

Name	Organization
Becky Rimmer	OMES-ISD
Karen Philbin	OMES-ISD
Sumita Pokharel	OMES-ISD
Mark Boltz	Northrop Grumman
Heather Johnson	Northrop Grumman

1 INTRODUCTION

When an applicant applies for benefits, it goes through a statewide security that allows/denies access to the webservice. The webservice checks with all the providers in the state and directs the application to the correct provider.

The purpose of this document is to describe the contents of the OKDHSLive Interoperability Information Exchange Package. The document will map the existing exchange information to the NIEM data elements and will identify the extensions/subset schemas required.

The diagram below in *Figure 1: IEPD Schema Hierarchy* illustrates the hierarchy of the schemas included in the IEPD.

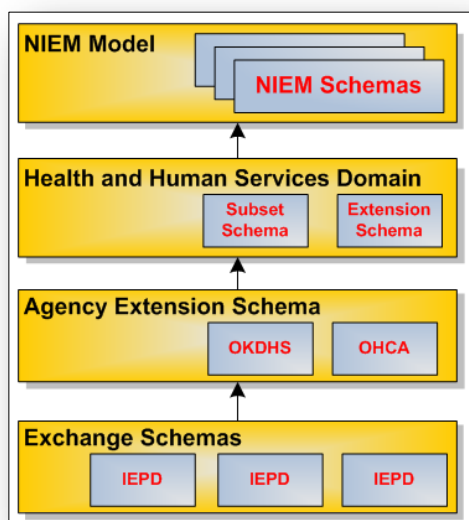


Figure 28: IEPD Schema Hierarchy

The purpose of the hierarchy diagram is also to define the acceptable inheritance scenarios.

As illustrated in *Figure 1: IEPD Schema Hierarchy* each of the schemas fits within one of the following categories:

1.1 Official NIEM Schemas

These will be a subset of schemas and represent a subset of the NIEM 2.0 standard schema, which will be generated using the Schema Subset Generation Tool (SSGT) available on the NIEM Tools website. The schemas in this category are maintained and exposed by the NIEM organization. The tools that will be utilized for searching existing schemas in NIEM are: SSGT and NIEM Wayfarer.

1.1.1 Health and Human Services Domain Exchange Model

The Health and Human Services (HHS) domain is currently in the works. The IEPDs created by this domain will be maintained and exposed by the NIEM Human Services Domain Governance Committee.

1.1.2 Oklahoma Specific Schemas

These are specific schemas that will need to be grouped for data types and elements that pertain to a specific Oklahoma agency, and thus may be shared by IEPDs created by that agency, but not shared outside the agency. These schemas will be created, maintained and exposed by the agencies.

1.1.3 IEPD Specific Schemas

The data types and elements contained within these schemas are specific to the IEPD in which they exist and are not expected to be shared outside of the IEPD. As such, the schemas within this category are maintained within the individual IEPD and are not exposed outside of that scope.

Defining and using IEPD Specific data elements should be minimized since they cannot be leveraged across IEPDs.

There are two types of schemas within the IEPD. The exchange schema describes the root node of the document that is used within the actual exchange of data and any other elements that are specific to that exchange. The extension schema contains data types and elements that can be shared across multiple exchange schemas within the same IEPD.

2 METHODOLOGY

Business processes, requirements and web services were first worked upon. The NIEM IEPD lifecycle methodology was used to generate IEPD Main Documents and IEPD artifacts. The details are given below:

1. Identify the Business Process.
2. Create:
 - a. Business Process Diagrams
 - b. Sequence Diagrams
 - c. Use Case
3. Identify Business Rules and Requirements at the data element level.
4. Conduct Stakeholder interviews for the identified interfaces and get their agreement on the TO-BE and get all required information from them.

5. Create Exchange Content Model, UML Diagrams - Mapping to NIEM objects/elements.
6. Create Schemas (Constraint, extension) based on our findings while comparing with NIEM schemas.
7. Create IEPD main document.
8. Generate other artifacts for the IEPD.

3 OKDHSLIVE INTEROPERABILITY PROCESS OVERVIEW

The Adult and Family Services Division (AFS) of the Oklahoma Department of Human Services provide many services for the population of Oklahoma. Three of these are: SNAP (Food Benefits), Child Care Assistance, and Medical Assistance. The computer system that supports AFS services is called PS2/FACS. PS2 is a mainframe IMS system that houses the data and has numerous online and batch IMS transactions that support the system. There is also some data stored in DB2. FACS is a PowerBuilder front end to the PS2 system that allows workers in the county offices to enter information into the PS2 system.

Several years ago, a system was acquired from the city of San Francisco and heavily customized for use by AFS clients to allow them to enter information for renewals and recertification on their cases and for clients known to the system (have had a case with AFS) to apply for benefits through a web application. Soon AFS will make the application process available to clients not known to the system. This system is called OKDHSLive and it collects the information from a client (or a worker assisting a client) required for a review, recertification, or application. At a very high level the description of OKDHSLive is as follows:

1. Data is collected from a client or worker through a series of web screens.
2. The data collected is saved in a SQL Server database.
3. Windows Services exist which look in the SQL Server database to see what has been submitted.
4. Data is sent from the SQL Server to various IMS transactions which update the appropriate information in the IMS and DB2 databases.
5. Depending on what data was updated, the case is automatically approved for renewal or recertification or sent to "Worker Review". Worker Review means that a worker needs to do something before the information can be approved. The reason for this could be something like documentation needs to be sent in, or something needs to be verified. In any case, once the information is sent to IMS, the case is handled by workers and the existing PS2/FACS system.

The example in this document meets a need that AFS would like to have when the application process is made available to clients not known to the system. AFS would like to allow entities outside OKDHS that collect similar information to send us the information they collect so we can submit an application for SNAP, Medical, or Child Care. The two examples

they want to start with are the Food Bank in Tulsa and the Community Action Center in Tulsa. This process could work for any service agency whether a state agency or not if we can define what we expect them to send us and in what format. These agencies would need to have some kind of agreement with OKDHS/AFS so we wouldn't let just anyone collect information without knowing about it. This would require some kind of security to be sure that we know who is sending the data.

If an agency sends data, then we would put the data in the SQL Server database and set it up so that it appears to be in submitted state so the backend windows services will send it to the PS2/FACS system for processing.

We thought this could be an interoperable process because there are other state agencies that take applications for the types of services that they support. If we build a statewide application that accepts this type of data, then the statewide application could send the information to any number of systems like OKDHSLive that are prepared to accept information from other agencies. We will need to think about how to format the data so that it can easily be changed as other applications are added that may have somewhat different data requirements and still have no impact on the existing applications that are already in the process. This example is only for OKDHSLive because we do not have any requirements for other agencies. Online Enrollment with OHCA might be another candidate for this process.

3.1 Data Requirements to OKDHSLive Interoperability (Input)

Detailed requirement for Data Elements are attached in *Appendix C-1-4*.

OKDHSLive Interoperability Business Process is outlines below in Diagram *Figure 2: OKDHSLive Interoperability - Business Process Diagram*

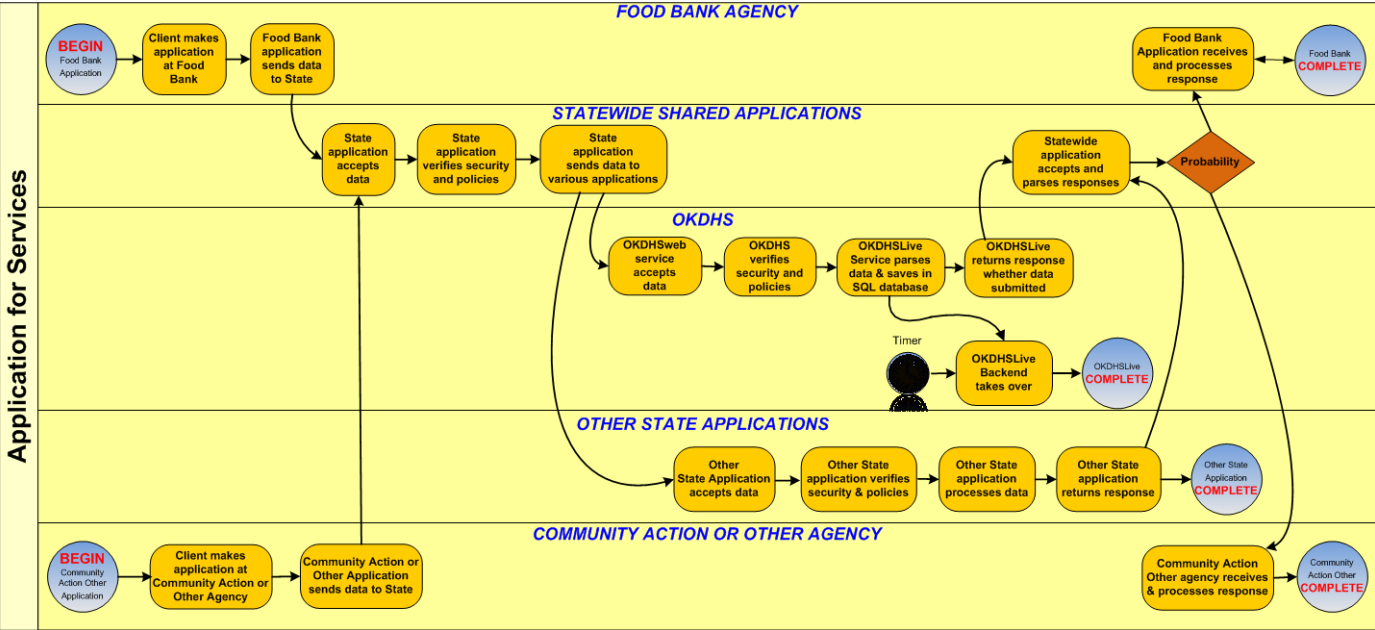


Figure 29: OKDHSLive Interoperability - Business Process Diagram

The message flow between entities is shown in the diagram below *Figure 3: OKDHSLive Interoperability Sequence Diagram*.

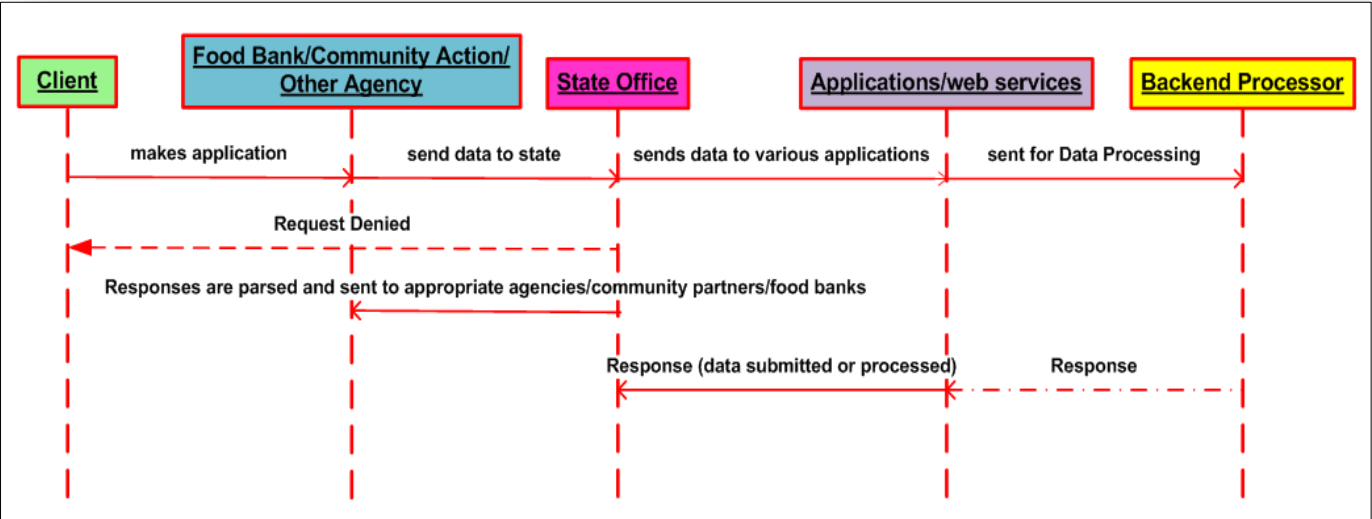


Figure 30: OKDHSLive Interoperability Sequence Diagram

Use Case Diagram of OKDHSLive Interoperability is outlined below in the diagram *Figure 4: OKDHSLive Interoperability Use Case Diagram*.

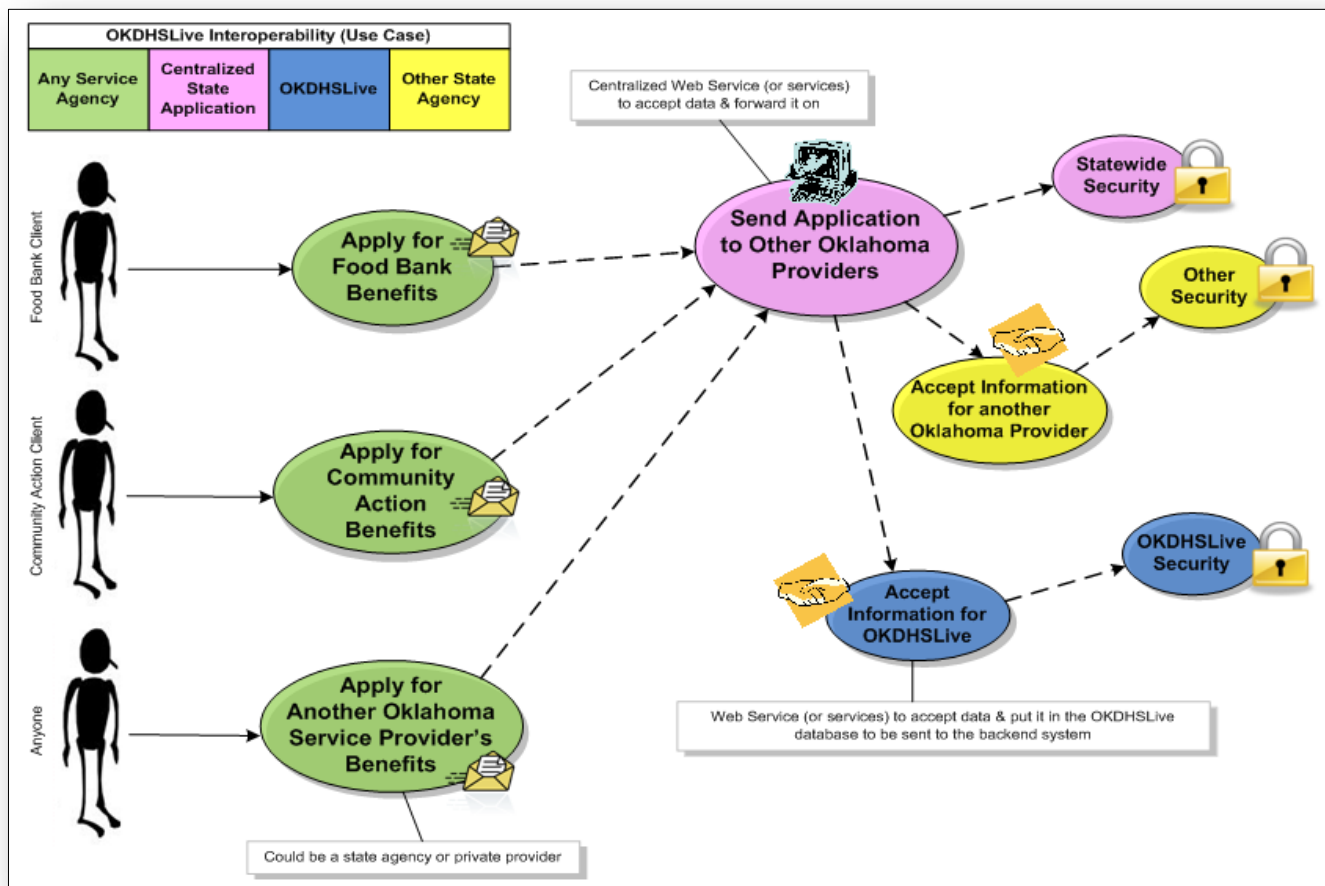


Figure 31: OKDHSLive Interoperability Use Case Diagram

Business Rules and Requirements:

1. Create a statewide web service to accept data from any agency whether internal or external to accept data for applications to receive services provided by Oklahoma State Agencies.
 - a. The example given here is the Food Bank submitting data for OKDHSLive (a system that will allow users to apply for benefits offered by the Adult and Family Services (AFS) Unit of the Oklahoma Department of Human Services. The specific benefits in this example are Food Benefits, Medical Benefits, and Child Care Benefits. Other AFS benefits may be added later.
 - b. This state wide application will accept the data and perform security checks to determine where the information came from and if that entity has an agreement with the state that allows them to send application data and perform any other security or policy requirement checks.
 - c. After verifying security and policies, it invokes all of the web services in the state that exist for accepting Application information.
 - d. We will need to worry about other agencies data requirements as they are added because this document only addresses data needed by OKDHSLive.

- e. A response is sent back to the caller with results such as security problems, success or failure of calling applications, responses from those applications, etc.
2. Create an OKDHSLive web service that will accept data from the statewide web service after the security has been verified.
 - a. This web service will perform additional security checks to verify that the sender has an agreement with OKDHS and that other security requirements are met. (Can/should this be done at the state level?).
 - b. After verifying security and policies, the web service saves the data and generates necessary other data for the SQL Server database used by OKDHSLive. The data is stored in a manner expected by the OKDHSLive “backend”. (The details of this will be in the detail specifications for this web service).
 - c. The web service will respond to the caller (the statewide application) with the results: whether a security problem exists, the data was successfully saved for OKDHSLive to process, or it wasn’t able to save the data.
 - d. We will need to determine how to handle the errors in case the data can’t be saved for some reason and how to recover, if possible.
 - e. After the SQL database is updated, the OKDHSLive “backend”, which is a series of windows services and web services, will notice that the data is there and submit it appropriately to the mainframe IMS system (PS2) for AFS. The application will most likely require an AFS worker to review it and contact the client for documentation and/or more information.
3. This looks like a good place for a messaging infrastructure (ESB?), where applications interested in picking up data could just grab an application request and process it.
4. Security requirements and policies to be determined.
5. Implement NIEM as a standard for data exchanges.

4 EXCHANGE CONTENT MODEL

The Exchange Content Model diagram for OKDHSLive Interoperability attached as *Appendix C-1-3*. The NIEM mapping document is attached as an *Appendix C-1-4*.

5 IEPD ARTIFACTS

Business Process Diagram
Use Case Diagram
Sequence Diagram
Exchange Content Model
CMT mapping Document
Subset Schema
Want list