



Technical Proposal Cover Sheet

Proposal Type: **TECHNICAL PROPOSAL**

Vendor Name: **VAULT Technologies, LLC**

Buyer: **Crystal Hustead**

Solicitation Number: **CRFP 0506 MIS2700000001**

Bid Issue Date: **07/15/26**

Fax Number: **304-558-3970**

Contact Person: **Tiffany Tate**

Phone Number: **+1 888-862-2920 Ext. 1**

Email Address: **tiffany.tate@vaulttechinc.com**

RECEIVED
2006-07-19 10:00:05
Tiffany Tate

Submitted To:

State of West Virginia
Department of Health
Bureau for Public Health

Submitted By:

VAULT Technologies, LLC
1 Reservoir Circle, Suite 101
Pikesville, MD 21208

Contact Information:

Contact Name: Tiffany Tate
Title: Chief Executive Officer
Telephone: 888-862-2920 Ext. 1
Email: tiffany.tate@vaulttechinc.com

Authorized Signature: 
Date: 08/18/26



Department of Administration
Purchasing Division
2019 Washington Street East
Post Office Box 50130
Charleston, WV 25305-0130

State of West Virginia
Centralized Request for Proposals
Info Technology

Proc Folder: 2009980

Doc Description: IMMUNIZATION INFORMATION SYSTEM (IIS)

Reason for Modification:

ADDENDUM 1
TO PROVIDE ANSWERS TO
VENDOR QUESTIONS AND
REVISED ATTACHMENT B

Proc Type: Central Master Agreement

Date Issued	Solicitation Closes	Solicitation No	Version
2026-08-04	2026-08-19 13:30	CRFP 0506 MIS2700000001	2

BID RECEIVING LOCATION

BID CLERK
DEPARTMENT OF ADMINISTRATION
PURCHASING DIVISION
2019 WASHINGTON ST E
CHARLESTON WV 25305
US

VENDOR

Vendor Customer Code: VS0000053113

Vendor Name : VAULT Technologies, LLC

Address :

Street : 1 Reservoir Circle, Suite 101

City : Pikesville

State : MD

Country : USA

Zip : 21208

Principal Contact : Tiffany Tate

Vendor Contact Phone: 888-862-2920

Extension: 1

FOR INFORMATION CONTACT THE BUYER

Crystal G Hustead
(304) 558-2402
crystal.g.hustead@wv.gov

Vendor
Signature X

Tiffany Tate

FEIN# 92-0384326

DATE 08/18/26

All offers subject to all terms and conditions contained in this solicitation

ADDITIONAL INFORMATION**REQUEST FOR PROPOSAL - IMMUNIZATION INFORMATION SYSTEM (IIS)**

THE STATE OF WEST VIRGINIA PURCHASING DIVISION FOR THE AGENCY, WEST VIRGINIA DEPARTMENT OF HEALTH, BUREAU OF PUBLIC HEALTH OFFICE OF EPIDEMIOLOGY AND PREVENTION SERVICES, IS SOLICITING PROPOSALS TO ESTABLISH AN OPEN-END CONTRACT FOR AN IMMUNIZATION INFORMATION SYSTEM (IIS) PER THE ATTACHED DOCUMENTS.

ONLINE RESPONSES ARE PROHIBITED FOR THIS SOLICITATION

QUESTIONS REGARDING THE SOLICITATION MUST BE SUBMITTED IN WRITING TO CRYSTAL.G.HUSTEAD@WV.GOV PRIOR TO THE QUESTION PERIOD DEADLINE CONTAINED IN THE INSTRUCTIONS TO VENDORS SUBMITTING BIDS

INVOICE TO	SHIP TO
HEALTH AND HUMAN RESOURCES BUREAU FOR PUBLIC HEALTH CENTRAL FINANCE 350 CAPITOL ST, RM 206 CHARLESTON WV 25301-3717 US	HEALTH AND HUMAN RESOURCES BUREAU FOR PUBLIC HEALTH CENTRAL FINANCE 350 CAPITOL ST, RM 206 CHARLESTON WV 25301-3717 US

Line	Comm Ln Desc	Qty	Unit of Measure	Unit Price	Total Price
1	Software				

Comm Code	Manufacturer	Specification	Model #
43230000			

Extended Description:

See attached Cost Sheet - Attachment A.

Vendor should clearly identify and segregate the cost proposal from the technical proposal in a separately sealed envelope.

**** Online responses have been prohibited for this solicitation. Follow all bidding instructions.

SCHEDULE OF EVENTS

<u>Line</u>	<u>Event</u>	<u>Event Date</u>
1	VENDOR QUESTION DEADLINE	2026-07-31

	Document Phase	Document Description	Page 3
MIS2700000001	Final	IMMUNIZATION INFORMATION SYSTEM (IIS)	

ADDITIONAL TERMS AND CONDITIONS

See attached document(s) for additional Terms and Conditions



Department of Administration
Purchasing Division
2019 Washington Street East
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Charleston, WV 25305-0130

State of West Virginia
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DEPARTMENT OF ADMINISTRATION
PURCHASING DIVISION
2019 WASHINGTON ST E
CHARLESTON WV 25305
US

VENDOR

Vendor Customer Code: VS0000053113

Vendor Name : VAULT Technologies, LLC

Address :

Street : 1 Reservoir Circle, Suite 101

City : Pikesville

State : MD

Country : USA

Zip : 21208

Principal Contact : Tiffany Tate

Vendor Contact Phone: 888-862-2920

Extension: 1

FOR INFORMATION CONTACT THE BUYER

Crystal G Hustead
(304) 558-2402
crystal.g.hustead@wv.gov

Vendor
Signature X

Tiffany Tate

FEIN# 92-0384326

DATE 08/18/26

All offers subject to all terms and conditions contained in this solicitation

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MIS2700000001	Final	IMMUNIZATION INFORMATION SYSTEM (IIS)	

ADDITIONAL TERMS AND CONDITIONS

See attached document(s) for additional Terms and Conditions

DESIGNATED CONTACT: Vendor appoints the individual identified in this Section as the Contract Administrator and the initial point of contact for matters relating to this Contract.

(Printed Name and Title) Tiffany Tate, Chief Executive Officer
(Address) 1 Reservoir Circle, Suite 101, Pikesville, MD 21208
(Phone Number) / (Fax Number) 888-862-2920, Ext. 1
(email address) Tiffany.Tate@vaulttechinc.com

CERTIFICATION AND SIGNATURE: By signing below, or submitting documentation through wvOASIS, I certify that: I have reviewed this Solicitation/Contract in its entirety; that I understand the requirements, terms and conditions, and other information contained herein; that this bid, offer or proposal constitutes an offer to the State that cannot be unilaterally withdrawn; that the product or service proposed meets the mandatory requirements contained in the Solicitation/Contract for that product or service, unless otherwise stated herein; that the Vendor accepts the terms and conditions contained in the Solicitation, unless otherwise stated herein; that I am submitting this bid, offer or proposal for review and consideration; that this bid or offer was made without prior understanding, agreement, or connection with any entity submitting a bid or offer for the same material, supplies, equipment or services; that this bid or offer is in all respects fair and without collusion or fraud; that this Contract is accepted or entered into without any prior understanding, agreement, or connection to any other entity that could be considered a violation of law; that I am authorized by the Vendor to execute and submit this bid, offer, or proposal, or any documents related thereto on Vendor's behalf; that I am authorized to bind the vendor in a contractual relationship; and that to the best of my knowledge, the vendor has properly registered with any State agency that may require registration.

By signing below, I further certify that I understand this Contract is subject to the provisions of West Virginia Code § 5A-3-62, which automatically voids certain contract clauses that violate State law; and that pursuant to W. Va. Code 5A-3-63, the entity entering into this contract is prohibited from engaging in a boycott against Israel.

VAULT Technologies, LLC
(Company) Tiffany Tate
(Signature of Authorized Representative)
Tiffany Tate, Chief Executive Officer (08/18/26)
(Printed Name and Title of Authorized Representative) (Date)
888-862-2920 Ext 1
(Phone Number) (Fax Number)
Tiffany.Tate@vaulttechinc.com
(Email Address)

ADDENDUM ACKNOWLEDGEMENT FORM
SOLICITATION NO.: CRFP MIS2700000001

Instructions: Please acknowledge receipt of all addenda issued with this solicitation by completing this addendum acknowledgment form. Check the box next to each addendum received and sign below. Failure to acknowledge addenda may result in bid disqualification.

Acknowledgment: I hereby acknowledge receipt of the following addenda and have made the necessary revisions to my proposal, plans and/or specification, etc.

Addendum Numbers Received:

(Check the box next to each addendum received)

- | | |
|--|--|
| ☒ Addendum No. 1 | ☐ Addendum No. 6 |
| ☐ Addendum No. 2 | ☐ Addendum No. 7 |
| ☐ Addendum No. 3 | ☐ Addendum No. 8 |
| ☐ Addendum No. 4 | ☐ Addendum No. 9 |
| ☐ Addendum No. 5 | ☐ Addendum No. 10 |

I understand that failure to confirm the receipt of addenda may be cause for rejection of this bid. I further understand that any verbal representation made or assumed to be made during any oral discussion held between Vendor's representatives and any state personnel is not binding. Only the information issued in writing and added to the specifications by an official addendum is binding.

VAULT Technologies, LLC

Company

Tiffany Tata

Authorized Signature

08/18/26

Date

NOTE: This addendum acknowledgement should be submitted with the bid to expedite document processing.

REQUEST FOR PROPOSAL

CRFP MIS2700000001-Immunization Information System

Points Allocated to Cost Proposal is 30

Proposal 1: Step 1 – $\$1,000,000 / \$1,000,000 = \text{Cost Score Percentage of } 1 (100\%)$
Step 2 – $1 \times 30 = \text{Total Cost Score of } 30$

Proposal 2: Step 1 – $\$1,000,000 / \$1,100,000 = \text{Cost Score Percentage of } 0.909091 (90.9091\%)$
Step 2 – $0.909091 \times 30 = \text{Total Cost Score of } 27.27273$

- 6.8. Availability of Information:** Proposal submissions become public and are available for review immediately after opening pursuant to West Virginia Code §5A-3-11(h). All other information associated with the RFP, including but not limited to, technical scores and reasons for disqualification, will not be available until after the contract has been awarded pursuant to West Virginia Code of State Rules §148-1-6.3.d.

By signing below, I certify that I have reviewed this Request for Proposal in its entirety; understand the requirements, terms and conditions, and other information contained herein; that I am submitting this proposal for review and consideration; that I am authorized by the bidder to execute this bid or any documents related thereto on bidder's behalf; that I am authorized to bind the bidder in a contractual relationship; and that, to the best of my knowledge, the bidder has properly registered with any State agency that may require registration.

VAULT Technologies, LLC

(Company)

Tiffany Tate, Chief Executive Officer



(Representative Name, Title)

888-862-2920 Ext 1

(Contact Phone/Fax Number)

08/18/26

(Date)

FEDERAL FUNDS ADDENDUM

2 C.F.R. §§ 200.317 – 200.327

Purpose: This addendum is intended to modify the solicitation in an attempt to make the contract compliant with the requirements of 2 C.F.R. §§ 200.317 through 200.327 relating to the expenditure of certain federal funds. This solicitation will allow the State to obtain one or more contracts that satisfy standard state procurement, state federal funds procurement, and county/local federal funds procurement requirements.

Instructions: Vendors who are willing to extend their contract to procurements with federal funds and the requirements that go along with doing so, should sign the attached document identified as: “REQUIRED CONTRACT PROVISIONS FOR NON-FEDERAL ENTITY CONTRACTS UNDER FEDERAL AWARDS (2 C.F.R. § 200.317)”

Should the awarded vendor be unwilling to extend the contract to federal funds procurement, the State reserves the right to award additional contracts to vendors that can and are willing to meet federal funds procurement requirements.

Changes to Specifications: Vendors should consider this solicitation as containing two separate solicitations, one for state level procurement and one for county/local procurement.

State Level: In the first solicitation, bid responses will be evaluated with applicable preferences identified in sections 15, 15A, and 16 of the “Instructions to Vendors Submitting Bids” to establish a contract for both standard state procurements and state federal funds procurements.

County Level: In the second solicitation, bid responses will be evaluated with applicable preferences identified in Sections 15, 15A, and 16 of the “Instructions to Vendors Submitting Bids” omitted to establish a contract for County/Local federal funds procurement.

Award: If the two evaluations result in the same vendor being identified as the winning bidder, the two solicitations will be combined into a single contract award. If the evaluations result in a different bidder being identified as the winning bidder, multiple contracts may be awarded. The State reserves the right to award to multiple different entities should it be required to satisfy standard state procurement, state federal funds procurement, and county/local federal funds procurement requirements.

State Government Use Caution: State agencies planning to utilize this contract for procurements subject to the above identified federal regulations should first consult with the federal agency providing the applicable funding to ensure the contract is compliant.

County/Local Government Use Caution: County and Local government entities planning to utilize this contract for procurements subject to the above identified federal regulation should first consult with the federal agency providing the applicable funding to ensure the contract is compliant. For purposes of County/Local government use, the solicitation resulting in this contract was conducted in accordance with the procurement laws, rules, and procedures governing the West Virginia Department of Administration, Purchasing Division, except that vendor preference has been omitted for County/Local use purposes and the contract terms contained in the document entitled “REQUIRED CONTRACT PROVISIONS FOR NON-FEDERAL ENTITY CONTRACTS UNDER FEDERAL AWARDS (2 C.F.R. § 200.317)” have been added.

FEDERAL FUNDS ADDENDUM

REQUIRED CONTRACT PROVISIONS FOR NON-FEDERAL ENTITY CONTRACTS UNDER FEDERAL AWARDS (2 C.F.R. § 200.317):

The State of West Virginia Department of Administration, Purchasing Division, and the Vendor awarded this Contract intend that this Contract be compliant with the requirements of the Procurement Standards contained in the Uniform Administrative Requirements, Cost Principles, and Audit Requirements found in 2 C.F.R. § 200.317, et seq. for procurements conducted by a Non-Federal Entity. Accordingly, the Parties agree that the following provisions are included in the Contract.

1. MINORITY BUSINESSES, WOMEN'S BUSINESS ENTERPRISES, AND LABOR SURPLUS AREA FIRMS: (2 C.F.R. § 200.321)

- a. The State confirms that it has taken all necessary affirmative steps to assure that minority businesses, women's business enterprises, and labor surplus area firms are used when possible. Those affirmative steps include:
 - (1) Placing qualified small and minority businesses and women's business enterprises on solicitation lists;
 - (2) Assuring that small and minority businesses, and women's business enterprises are solicited whenever they are potential sources;
 - (3) Dividing total requirements, when economically feasible, into smaller tasks or quantities to permit maximum participation by small and minority businesses, and women's business enterprises;
 - (4) Establishing delivery schedules, where the requirement permits, which encourage participation by small and minority businesses, and women's business enterprises;
 - (5) Using the services and assistance, as appropriate, of such organizations as the Small Business Administration and the Minority Business Development Agency of the Department of Commerce; and
 - (6) Requiring the prime contractor, if subcontracts are to be let, to take the affirmative steps listed in paragraphs (1) through (5) above.
- b. Vendor confirms that if it utilizes subcontractors, it will take the same affirmative steps to assure that minority businesses, women's business enterprises, and labor surplus area firms are used when possible.

2. DOMESTIC PREFERENCES: (2 C.F.R. § 200.322)

- a. The State confirms that as appropriate and to the extent consistent with law, it has, to the greatest extent practicable under a Federal award, provided a preference for the purchase, acquisition, or use of goods, products, or materials produced in the United

States (including but not limited to iron, aluminum, steel, cement, and other manufactured products).

b. Vendor confirms that will include the requirements of this Section 2. Domestic Preference in all subawards including all contracts and purchase orders for work or products under this award.

c. Definitions: For purposes of this section:

(1) "Produced in the United States" means, for iron and steel products, that all manufacturing processes, from the initial melting stage through the application of coatings, occurred in the United States.

(2) "Manufactured products" means items and construction materials composed in whole or in part of non-ferrous metals such as aluminum; plastics and polymer-based products such as polyvinyl chloride pipe; aggregates such as concrete; glass, including optical fiber; and lumber.

3. BREACH OF CONTRACT REMEDIES AND PENALTIES:

(2 C.F.R. § 200.327 and Appendix II)

(a) The provisions of West Virginia Code of State Rules § 148-1-5 provide for breach of contract remedies, and penalties. A copy of that rule is attached hereto as Exhibit A and expressly incorporated herein by reference.

4. TERMINATION FOR CAUSE AND CONVENIENCE:

(2 C.F.R. § 200.327 and Appendix II)

(a) The provisions of West Virginia Code of State Rules § 148-1-5 govern Contract termination. A copy of that rule is attached hereto as Exhibit A and expressly incorporated herein by reference.

5. EQUAL EMPLOYMENT OPPORTUNITY:

(2 C.F.R. § 200.327 and Appendix II)

Except as otherwise provided under 41 CFR Part 60, and if this contract meets the definition of "federally assisted construction contract" in 41 CFR Part 60-1.3, this contract includes the equal opportunity clause provided under 41 CFR 60-1.4(b), in accordance with Executive Order 11246, "Equal Employment Opportunity" (30 FR 12319, 12935, 3 CFR Part, 1964-1965 Comp., p. 339), as amended by Executive Order 11375, "Amending Executive Order 11246 Relating to Equal Employment Opportunity," and implementing regulations at 41 CFR part 60, "Office of Federal Contract Compliance Programs, Equal Employment Opportunity, Department of Labor."

6. DAVIS-BACON WAGE RATES:
(2 C.F.R. § 200.327 and Appendix II)

Vendor agrees that if this Contract includes construction, all construction work in excess of \$2,000 will be completed and paid for in compliance with the Davis–Bacon Act (40 U.S.C. 3141–3144, and 3146–3148) as supplemented by Department of Labor regulations (29 CFR Part 5, “Labor Standards Provisions Applicable to Contracts Covering Federally Financed and Assisted Construction”). In accordance with the statute, contractors must:

- (a) pay wages to laborers and mechanics at a rate not less than the prevailing wages specified in a wage determination made by the Secretary of Labor.
- (b) pay wages not less than once a week.

A copy of the current prevailing wage determination issued by the Department of Labor is attached hereto as Exhibit B. The decision to award a contract or subcontract is conditioned upon the acceptance of the wage determination. The State will report all suspected or reported violations to the Federal awarding agency.

7. ANTI-KICKBACK ACT:
(2 C.F.R. § 200.327 and Appendix II)

Vendor agrees that it will comply with the Copeland Anti-KickBack Act (40 U.S.C. 3145), as supplemented by Department of Labor regulations (29 CFR Part 3, “Contractors and Subcontractors on Public Building or Public Work Financed in Whole or in Part by Loans or Grants from the United States”). Accordingly, Vendor, Subcontractors, and anyone performing under this contract are prohibited from inducing, by any means, any person employed in the construction, completion, or repair of public work, to give up any part of the compensation to which he or she is otherwise entitled. The State must report all suspected or reported violations to the Federal awarding agency.

8. CONTRACT WORK HOURS AND SAFETY STANDARDS ACT
(2 C.F.R. § 200.327 and Appendix II)

Where applicable, and only for contracts awarded by the State in excess of \$100,000 that involve the employment of mechanics or laborers, Vendor agrees to comply with 40 U.S.C. 3702 and 3704, as supplemented by Department of Labor regulations (29 CFR Part 5). Under 40 U.S.C. 3702 of the Act, Vendor is required to compute the wages of every mechanic and laborer on the basis of a standard work week of 40 hours. Work in excess of the standard work week is permissible provided that the worker is compensated at a rate of not less than one and a half times the basic rate of pay for all hours worked in excess of 40 hours in the work week. The requirements of 40 U.S.C. 3704 are applicable to construction work and provide that no laborer or mechanic must be required to work in surroundings or under working conditions which are unsanitary, hazardous or dangerous. These requirements do not apply to the purchases of supplies or materials or articles ordinarily available on the open market, or contracts for transportation or transmission of intelligence.

9. RIGHTS TO INVENTIONS MADE UNDER A CONTRACT OR AGREEMENT.
(2 C.F.R. § 200.327 and Appendix II)

If the Federal award meets the definition of “funding agreement” under 37 CFR § 401.2 (a) and the recipient or subrecipient wishes to enter into a contract with a small business firm or nonprofit organization regarding the substitution of parties, assignment or performance of experimental, developmental, or research work under that “funding agreement,” the recipient or subrecipient must comply with the requirements of 37 CFR Part 401, “Rights to Inventions Made by Nonprofit Organizations and Small Business Firms Under Government Grants, Contracts and Cooperative Agreements,” and any implementing regulations issued by the awarding agency.

10. CLEAN AIR ACT
(2 C.F.R. § 200.327 and Appendix II)

Vendor agrees that if this contract exceeds \$150,000, Vendor is to comply with all applicable standards, orders or regulations issued pursuant to the Clean Air Act (42 U.S.C. 7401–7671q) and the Federal Water Pollution Control Act as amended (33 U.S.C. 1251–1387). Violations must be reported to the Federal awarding agency and the Regional Office of the Environmental Protection Agency (EPA).

11. DEBARMENT AND SUSPENSION
(2 C.F.R. § 200.327 and Appendix II)

The State will not award to any vendor that is listed on the governmentwide exclusions in the System for Award Management (SAM), in accordance with the OMB guidelines at 2 CFR 180 that implement Executive Orders 12549 (3 CFR part 1986 Comp., p. 189) and 12689 (3 CFR part 1989 Comp., p. 235), “Debarment and Suspension.” SAM Exclusions contains the names of parties debarred, suspended, or otherwise excluded by agencies, as well as parties declared ineligible under statutory or regulatory authority other than Executive Order 12549.

12. BYRD ANTI-LOBBYING AMENDMENT
(2 C.F.R. § 200.327 and Appendix II)

Vendors that apply or bid for an award exceeding \$100,000 must file the required certification. Each tier certifies to the tier above that it will not and has not used Federal appropriated funds to pay any person or organization for influencing or attempting to influence an officer or employee of any agency, a member of Congress, officer or employee of Congress, or an employee of a member of Congress in connection with obtaining any Federal contract, grant or any other award covered by 31 U.S.C. 1352. Each tier must also disclose any lobbying with non-Federal funds that takes place in connection with obtaining any Federal award. Such disclosures are forwarded from tier to tier up to the non-Federal award.

13. PROCUREMENT OF RECOVERED MATERIALS

(2 C.F.R. § 200.327 and Appendix II; 2 C.F.R. § 200.323)

Vendor agrees that it and the State must comply with section 6002 of the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act. The requirements of Section 6002 include procuring only items designated in guidelines of the Environmental Protection Agency (EPA) at 40 CFR part 247 that contain the highest percentage of recovered materials practicable, consistent with maintaining a satisfactory level of competition, where the purchase price of the item exceeds \$10,000 or the value of the quantity acquired during the preceding fiscal year exceeded \$10,000; procuring solid waste management services in a manner that maximizes energy and resource recovery; and establishing an affirmative procurement program for procurement of recovered materials identified in the EPA guidelines.

14. PROHIBITION ON CERTAIN TELECOMMUNICATIONS AND VIDEO SURVEILLANCE SERVICES OR EQUIPMENT.

(2 C.F.R. § 200.327 and Appendix II; 2 CFR § 200.216)

Vendor and State agree that both are prohibited from obligating or expending funds under this Contract to:

- (1) Procure or obtain;
- (2) Extend or renew a contract to procure or obtain; or
- (3) Enter into a contract (or extend or renew a contract) to procure or obtain equipment, services, or systems that uses covered telecommunications equipment or services as a substantial or essential component of any system, or as critical technology as part of any system. As described in Public Law 115–232, section 889, covered telecommunications equipment is telecommunications equipment produced by Huawei Technologies Company or ZTE Corporation (or any subsidiary or affiliate of such entities).
 - (i) For the purpose of public safety, security of government facilities, physical security surveillance of critical infrastructure, and other national security purposes, video surveillance and telecommunications equipment produced by Hytera Communications Corporation, Hangzhou Hikvision Digital Technology Company, or Dahua Technology Company (or any subsidiary or affiliate of such entities).
 - (ii) Telecommunications or video surveillance services provided by such entities or using such equipment.
 - (iii) Telecommunications or video surveillance equipment or services produced or provided by an entity that the Secretary of Defense, in consultation with the Director of the National Intelligence or the Director of the Federal Bureau of Investigation, reasonably believes to be an entity owned or controlled by, or otherwise connected to, the government of a covered foreign country.

In implementing the prohibition under Public Law 115–232, section 889, subsection (f), paragraph (1), heads of executive agencies administering loan, grant, or subsidy programs shall prioritize available funding and technical support to assist affected businesses, institutions and organizations as is reasonably necessary for those affected entities to transition from covered communications equipment and services, to procure replacement equipment and services, and to ensure that communications service to users and customers is sustained.

State of West Virginia

Vendor Name:

By: _____

By: Tiffany Tate

Printed Name: _____

Printed Name: _____

Title: _____

Title: _____

Date: _____

Date: _____

EXHIBIT A To:
REQUIRED CONTRACT PROVISIONS FOR NON-FEDERAL ENTITY
CONTRACTS UNDER FEDERAL AWARDS (2 C.F.R. § 200.317):

W. Va. CSR § 148-1-5

West Virginia Code of State Rules
Title 148. Department of Administration
Legislative Rule (Ser. 1)
Series 1. Purchasing

W. Va. Code St. R. § 148-1-5

§ 148-1-5. Remedies.

Currentness

5.1. The Director may require that the spending unit attempt to resolve any issues that it may have with the vendor prior to pursuing a remedy contained herein. The spending unit must document any resolution efforts and provide copies of those documents to the Purchasing Division.

5.2. Contract Cancellation.

5.2.1. Cancellation. The Director may cancel a purchase or contract immediately under any one of the following conditions including, but not limited to:

5.2.1.a. The vendor agrees to the cancellation;

5.2.1.b. The vendor has obtained the contract by fraud, collusion, conspiracy, or is in conflict with any statutory or constitutional provision of the State of West Virginia;

5.2.1.c. Failure to honor any contractual term or condition or to honor standard commercial practices;

5.2.1.d. The existence of an organizational conflict of interest is identified;

5.2.1.e. Funds are not appropriated or an appropriation is discontinued by the legislature for the acquisition;

5.2.1.f. Violation of any federal, state, or local law, regulation, or ordinance, and

5.2.1.g. The contract was awarded in error.

5.2.2. The Director may cancel a purchase or contract for any reason or no reason, upon providing

the vendor with 30 days' notice of the cancellation.

5.2.3. Opportunity to Cure. In the event that a vendor fails to honor any contractual term or condition, or violates any provision of federal, state, or local law, regulation, or ordinance, the Director may request that the vendor remedy the contract breach or legal violation within a time frame the Director determines to be appropriate. If the vendor fails to remedy the contract breach or legal violation or the Director determines, at his or her sole discretion, that such a request is unlikely to yield a satisfactory result, then he or she may cancel immediately without providing the vendor an opportunity to perform a remedy.

5.2.4. Re-Award. The Director may award the cancelled contract to the next lowest responsible bidder (or next highest scoring bidder if best value procurement) without a subsequent solicitation if the following conditions are met:

5.2.4.a. The next lowest responsible bidder (or next highest scoring bidder if best value procurement) is able to perform at the price contained in its original bid submission, and

5.2.4.b. The contract is an open-end contract, a one-time purchase contract, or a contract for work which has not yet commenced.

Award to the next lowest responsible bidder (or next highest scoring bidder if best value procurement) will not be an option if the vendor's failure has in any way increased or significantly changed the scope of the original contract. The vendor failing to honor contractual and legal obligations is responsible for any increase in cost the state incurs as a result of the re-award.

5.3. Non-Responsible. If the Director believes that a vendor may be non-responsible, the Director may request that a vendor or spending unit provide evidence that the vendor either does or does not have the capability to fully perform the contract requirements, and the integrity and reliability necessary to assure good faith performance. If the Director determines that the vendor is non-responsible, the Director shall reject that vendor's bid and shall not award the contract to that vendor. A determination of non-responsibility must be evaluated on a case-by-case basis and can only be made after the vendor in question has submitted a bid. A determination of non-responsibility will only extend to the contract for which the vendor has submitted a bid and does not operate as a bar against submitting future bids.

5.4. Suspension.

5.4.1. The Director may suspend, for a period not to exceed 1 year, the right of a vendor to bid on

procurements issued by the Purchasing Division or any state spending unit under its authority if:

5.4.1.a. The vendor has submitted a bid and then requested that its bid be withdrawn after bids have been publicly opened.

5.4.1.b. The vendor has exhibited poor performance in fulfilling his or her contractual obligations to the State. Poor performance includes, but is not limited to any of the following: violations of law, regulation, or ordinance; failure to deliver timely; failure to deliver quantities ordered; poor performance reports; or failure to deliver commodities, services, or printing at the quality level required by the contract.

5.4.1.c. The vendor has breached a contract issued by the Purchasing Division or any state spending unit under its authority and refuses to remedy that breach.

5.4.1.d. The vendor's actions have given rise to one or more of the grounds for debarment listed in W. Va. Code § 5A-3-33d.

5.4.2. Vendor suspension for the reasons listed in section 5.4 above shall occur as follows:

5.4.2.a. Upon a determination by the Director that a suspension is warranted, the Director will serve a notice of suspension to the vendor.

5.4.2.b. A notice of suspension must inform the vendor:

5.4.2.b.1. Of the grounds for the suspension;

5.4.2.b.2. Of the duration of the suspension;

5.4.2.b.3. Of the right to request a hearing contesting the suspension;

5.4.2.b.4. That a request for a hearing must be served on the Director no later than 5 working days of the vendor's receipt of the notice of suspension;

5.4.2.b.5. That the vendor's failure to request a hearing no later than 5 working days of

the receipt of the notice of suspension will be deemed a waiver of the right to a hearing and result in the automatic enforcement of the suspension without further notice or an opportunity to respond; and

5.4.2.b.6. That a request for a hearing must include an explanation of why the vendor believes the Director's asserted grounds for suspension do not apply and why the vendor should not be suspended.

5.4.2.c. A vendor's failure to serve a request for hearing on the Director no later than 5 working days of the vendor's receipt of the notice of suspension will be deemed a waiver of the right to a hearing and may result in the automatic enforcement of the suspension without further notice or an opportunity to respond.

5.4.2.d. A vendor who files a timely request for hearing but nevertheless fails to provide an explanation of why the asserted grounds for suspension are inapplicable or should not result in a suspension, may result in a denial of the vendor's hearing request.

5.4.2.e. Within 5 working days of receiving the vendor's request for a hearing, the Director will serve on the vendor a notice of hearing that includes the date, time and place of the hearing.

5.4.2.f. The hearing will be recorded and an official record prepared. Within 10 working days of the conclusion of the hearing, the Director will issue and serve on the vendor, a written decision either confirming or reversing the suspension.

5.4.3. A vendor may appeal a decision of the Director to the Secretary of the Department of Administration. The appeal must be in writing and served on the Secretary no later than 5 working days of receipt of the Director's decision.

5.4.4. The Secretary, or his or her designee, will schedule an appeal hearing and serve on the vendor, a notice of hearing that includes the date, time and place of the hearing. The appeal hearing will be recorded and an official record prepared. Within 10 working days of the conclusion of the appeal hearing, the Secretary will issue and serve on the vendor a written decision either confirming or reversing the suspension.

5.4.5. Any notice or service related to suspension actions or proceedings must be provided by certified mail, return receipt requested.

5.5. Vendor Debarment. The Director may debar a vendor on the basis of one or more of the grounds for debarment contained in W. Va. Code § 5A-3-33d or if the vendor has been declared ineligible to participate in procurement related activities under federal laws and regulation.

5.5.1. Debarment proceedings shall be conducted in accordance with W. Va. Code § 5A-3-33e and these rules. A vendor that has received notice of the proposed debarment by certified mail, return receipt requested, must respond to the proposed debarment within 30 working days after receipt of notice or the debarment will be instituted without further notice. A vendor is deemed to have received notice, notwithstanding the vendor's failure to accept the certified mail, if the letter is addressed to the vendor at its last known address. After considering the matter and reaching a decision, the Director shall notify the vendor of his or her decision by certified mail, return receipt requested.

5.5.2. Any vendor, other than a vendor prohibited from participating in federal procurement, undergoing debarment proceedings is permitted to continue participating in the state's procurement process until a final debarment decision has been reached. Any contract that a debarred vendor obtains prior to a final debarment decision shall remain in effect for the current term, but may not be extended or renewed. Notwithstanding the foregoing, the Director may cancel a contract held by a debarred vendor if the Director determines, in his or her sole discretion, that doing so is in the best interest of the State. A vendor prohibited from participating in federal procurement will not be permitted to participate in the state's procurement process during debarment proceedings.

5.5.3. If the Director's final debarment decision is that debarment is warranted and notice of the final debarment decision is mailed, the Purchasing Division shall reject any bid submitted by the debarred vendor, including any bid submitted prior to the final debarment decision if that bid has not yet been accepted and a contract consummated.

5.5.4. Pursuant to W.Va. Code § 5A-3-33e(e), the length of the debarment period will be specified in the debarment decision and will be for a period of time that the Director finds necessary and proper to protect the public from an irresponsible vendor.

5.5.5. List of Debarred Vendors. The Director shall maintain and publicly post a list of debarred vendors on the Purchasing Division's website.

5.5.6. Related Party Debarment. The Director may pursue debarment of a related party at the same time that debarment of the original vendor is proceeding or at any time thereafter that the Director determines a related party debarment is warranted. Any entity that fails to provide the Director with full, complete, and accurate information requested by the Director to determine related party

status will be presumed to be a related party subject to debarment.

5.6. Damages.

5.6.1. A vendor who fails to perform as required under a contract shall be liable for actual damages and costs incurred by the state.

5.6.2. If any commodities delivered under a contract have been used or consumed by a spending unit and on testing the commodities are found not to comply with specifications, no payment may be approved by the Spending Unit for the merchandise until the amount of actual damages incurred has been determined.

5.6.3. The Spending Unit shall seek to collect damages by following the procedures established by the Office of the Attorney General for the collection of delinquent obligations.

Credits

History: Filed 4-1-19, eff. 4-1-19; Filed 4-16-21, eff. 5-1-21.

Current through register dated May 7, 2021. Some sections may be more current. See credits for details.

W. Va. C.S.R. § 148-1-5, WV ADC § 148-1-5

End of Document

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EXHIBIT B To:
REQUIRED CONTRACT PROVISIONS FOR NON-FEDERAL ENTITY
CONTRACTS UNDER FEDERAL AWARDS (2 C.F.R. § 200.317):

Prevailing Wage Determination

☐ – Not Applicable Because Contract Not for Construction

☐ – Federal Prevailing Wage Determination on Next Page

TECHNICAL PROPOSAL

Immunization Information System (IIS)

CRFP 0506 MIS2700000001

Submitted to
State of West Virginia
Department of Health
Bureau for Public Health

Submitted by
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Sections 4.1 and 4.2: Background, Operating Environment, and Project Goals

West Virginia's Immunization Information System sits at the intersection of patient care, public health, and emergency preparedness. It serves as the authoritative source of immunization data for millions of residents and supports the daily work of healthcare providers, pharmacists, schools, local health departments, and state officials across the state. Under WV Administrative Code §64-7-6, every immunization administered in West Virginia must be reported to the IIS, creating a mandatory-reporting environment that exceeds the participation requirements found in many states. The system currently manages approximately 3 million patient records, 32 million vaccination records, and 24,000 user accounts across a diverse provider network that includes 445 public and 1,200 private VFC providers. The scale, complexity, and criticality of this environment require more than a compliant registry—they require a resilient, interoperable, and operationally focused platform capable of supporting both routine immunization activities and the public health challenges of tomorrow.

The transaction load is substantial: in any six-month period, the system processes more than 200 concurrent non-HL7 users, 8,000,000+ QDP messages, 1,000,000+ VXUs, and 1,500+ VXQs. In addition to standard interfaces, including CDC IZ Gateway, HIEs, EHRs, VTrckS: the IIS exchanges data with WV-specific licensing, pharmacy, education, and emergency response systems through flat-file and non-standard custom protocols. Any replacement system must support this full interface landscape from day one.

West Virginia's geography presents operational challenges. With providers dispersed across rural counties with limited health infrastructure, the IIS cannot function as a passive data repository. It must actively support provider onboarding, enable mobile and community-based clinic operations, have some offline capabilities, and provide the public health intelligence needed to identify and close coverage gaps in communities that are genuinely difficult to reach.

WV'S CURRENT OPERATING ENVIRONMENT: KEY PARAMETERS

Parameter	Current State (from RFP 4.1)
Patient records	~3,000,000
Vaccination records	~32,000,000
User accounts	24,000 total: Facility Client (10,000), Facility View (5,000), Org Client (6,000), Org View (1,000), Registry Client (300), Registry View (50), School Nurse (600), Vendor View (50) + administrative and HL7 no-login accounts
Provider network	445 public VFC + 1,200 private VFC providers
Six-month transaction load	200+ concurrent non-HL7 users; 8M+ QDPs; 1M+ VXUs; 1,500+ VXQs

Parameter	Current State (from RFP 4.1)
Reporting obligation	WV Admin Code §64-7-6: ALL immunization administrations statewide must be reported, broader and more prescriptive than federal baseline
Interface landscape	Standard: CDC IZ Gateway, HIEs, EHRs, VTrckS, school systems, pharmacies. Non-standard: WV-specific licensing, pharmacy, education, and emergency response systems using HL7, flat-file, and custom protocols
Hosting	Currently vendor-hosted in a remote cloud environment providing centralized storage, access control, and secure transmission

WHAT WEST VIRGINIA NEEDS FROM A NEW IIS

A Day in the Life of a Modern Immunization Information System – a fictional story

It is early spring in West Virginia. A Local Health Department Epidemiologist receives notification of a confirmed measles case involving a child who recently attended a regional sporting event near the Ohio border. Within minutes, public health officials begin investigating potential exposures. Using OptimIIS, West Virginia's Immunization Information System, epidemiologists quickly identify vaccination histories, forecast vaccine needs, verify school compliance records, and determine which individuals may be susceptible to infection. Because the child recently traveled and interacted with residents from neighboring states, IISConnex is used to exchange immunization information with surrounding jurisdictions, providing a more complete understanding of potential exposures and vaccination status.

As records are received from neighboring jurisdictions, patient matching and deduplication capabilities reconcile multiple records into a single longitudinal immunization history, ensuring public health officials have an accurate view of each individual's vaccination status.

The IIS has done what an IIS is designed to do: provide trusted immunization data and help public health officials understand the scope of the threat.

However, identifying the problem is only the beginning.

Coverage reports reveal that several rural communities have lower-than-desired MMR vaccination rates. A State Immunization Program Manager knows vaccination clinics must be established quickly.

Using the Mass Vaccination Application, vaccination clinics are created within hours. Registration opens immediately. Parents begin scheduling appointments online, while walk-in capacity is established for families without internet access. Vaccine inventory is allocated to each clinic location and tracked electronically. Meanwhile, a State Emergency Preparedness Director faces another challenge: staffing.

Several counties need additional vaccinators, registrars, clinic managers, and outreach workers. Rather than relying on spreadsheets, emails, and phone calls, the State activates its workforce management capabilities. A Retired Public Health Nurse receives a notification on her phone about temporary vaccination opportunities near her home. She completes an online application, uploads her nursing license, and verifies her certifications electronically. The system automatically checks credential status and records required training.

Across the state, a Community Pharmacist, a Medical Assistant, and a Nursing Student do the same. Within hours, hundreds of qualified personnel have applied and been vetted.

The system automatically assigns required training modules, tracks completion, and records certifications. Once approved, workers gain access to self-scheduling tools that allow them to view available shifts and volunteer for assignments that fit their schedules.

The Retired Public Health Nurse selects two weekend clinic shifts. The Community Pharmacist signs up for an evening vaccination event. The Nursing Student volunteers to support registration operations.

When clinic day arrives, each worker checks in using a mobile device. Hours worked are automatically recorded. Supervisors monitor staffing levels in real time and quickly fill any unexpected gaps. Payroll, contractor payments, and workforce reporting are generated automatically from the same platform.

At a community center in rural West Virginia, families begin arriving for vaccination appointments. Registration, consent, vaccine administration, and documentation occur electronically. Vaccination records are immediately updated within OptimIIS. Forecasting algorithms determine whether additional doses are needed and automatically update each patient's recommended schedule.

Reminder and recall campaigns are simultaneously underway. Parents of children who are overdue for MMR vaccination receive text messages, emails, and phone reminders encouraging them to schedule appointments. Community organizations, schools, and healthcare providers receive targeted outreach materials based on data generated directly from the IIS.

As the response expands, vaccine inventory becomes increasingly important. Public health officials can see exactly how many doses remain at each clinic, where inventory is being consumed most rapidly, and whether additional vaccine orders are needed. Vaccine ordering, distribution, and inventory management occur within the same ecosystem supporting the outbreak response.

A Regional Immunization Coordinator identifies providers with available inventory, providers requiring additional doses, and providers capable of expanding clinic capacity. Additional vaccine orders are placed and tracked electronically, ensuring supply remains aligned with demand.

Weeks later, the outbreak has been contained.

But the value of the ecosystem continues.

Eligible vaccination encounters are automatically identified for reimbursement. Claims are generated through the Billing and Reimbursement Platform, reducing administrative burden and helping participating providers recover costs associated with the response effort.

Parents access vaccination records and certificates through the Consumer Access Portal without needing to call health departments or providers. Schools receive updated documentation. Public health officials generate after-action reports using data already captured throughout the response.

At the state level, the State Health Officer can review a comprehensive dashboard showing:

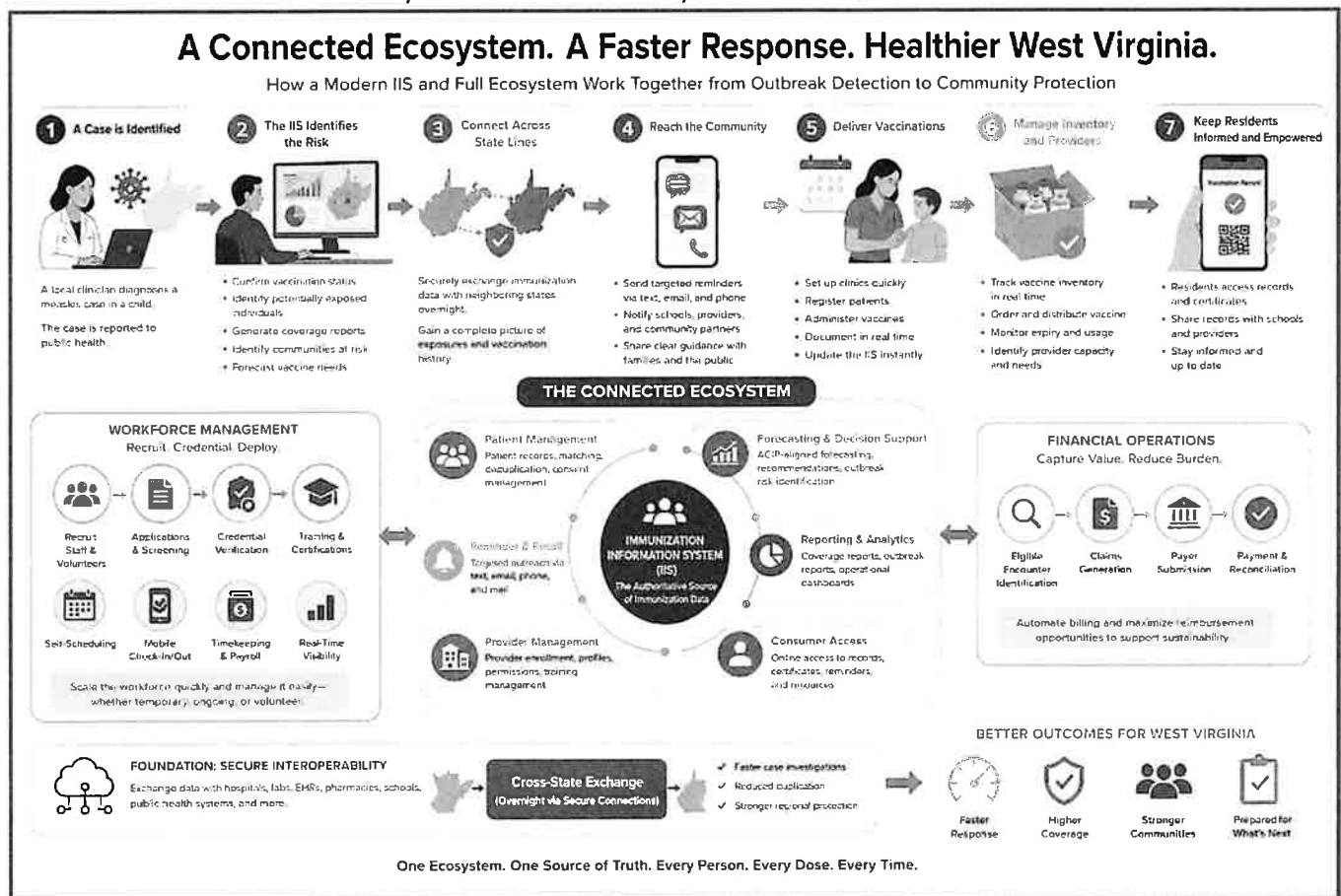
- Confirmed and suspected measles cases
- Vaccination coverage rates by county
- Populations at risk
- Vaccination clinic activity
- Vaccine inventory levels
- Vaccine orders and distribution status
- Workforce participation and staffing levels

- Outreach campaign effectiveness
- Interstate immunization data exchange activity
- Reimbursement and financial recovery metrics

A traditional IIS helps public health officials understand a problem.

OptimIIS and the VAULT ecosystem help public health officials understand the problem, mobilize the workforce, engage the community, deliver vaccinations, manage inventory, coordinate across jurisdictions, recover costs, and measure outcomes—all while maintaining the authoritative immunization record for the State of West Virginia.

This is the difference between a system of record and a system of action.



Learn more: <https://wv-vti-iisproposal.vaulttechinc.com/>

The agency seeks an IIS that improves immunization tracking, enhances vaccination coverage, and supports data-driven public health decision-making across a mandatory-reporting, geographically dispersed environment. VAULT's read of the RFP identifies five specific operational needs that go beyond minimum CDC functional compliance.

OptimIIS is a complete, standalone Immunization Information System that fulfills all functional requirements of this procurement. Its shared architecture with VAULT's broader public health platform provides West Virginia with optional capabilities that extend the value of the IIS investment without requiring additional systems, vendors, or integrations.

Operational Need	Why It Matters for WV	VAULT's Response
§64-7-6 reporting continuity with no gap during transition	A single day's gap in mandatory reporting creates a compliance deficit that cannot be retroactively remedied	Nine-phase parallel-operations implementation: legacy IIS stays live, interfaces stay active, §64-7-6 obligations met continuously until formal written Acceptance of the new system
Non-standard interface support	WV's licensing, pharmacy, education, and emergency response connections use formats that HL7-only systems cannot handle	IISConnex configurable transformation layer handles HL7, flat-file, and custom protocols natively, in production across 30+ state systems today
Rural and mobile care delivery	Geographic dispersion means providers need more than a web form; they need offline capability, mobile clinic activation, and rapid onboarding	A full offline vaccination documentation; same-day clinic activation; provider accounts created by OEPS without vendor involvement
Provider data quality at scale	1,645+ providers of varying technical sophistication create sustained HL7 error management and training demands	Real-time provider scorecards, automated hold queue management, and targeted training recommendations with no separate DQA service required
Long-term financial sustainability	VFC billing and reimbursement are program survival capabilities, especially in rural WV where providers cannot absorb uncaptured revenue	A third-party billing engine that performs private and VFC billing, claims, and reimbursement integrated into the encounter record, not a separate system

VAULT's Proposed Solution: OptimIIS and VAULT's Immunization Program Management Operating System

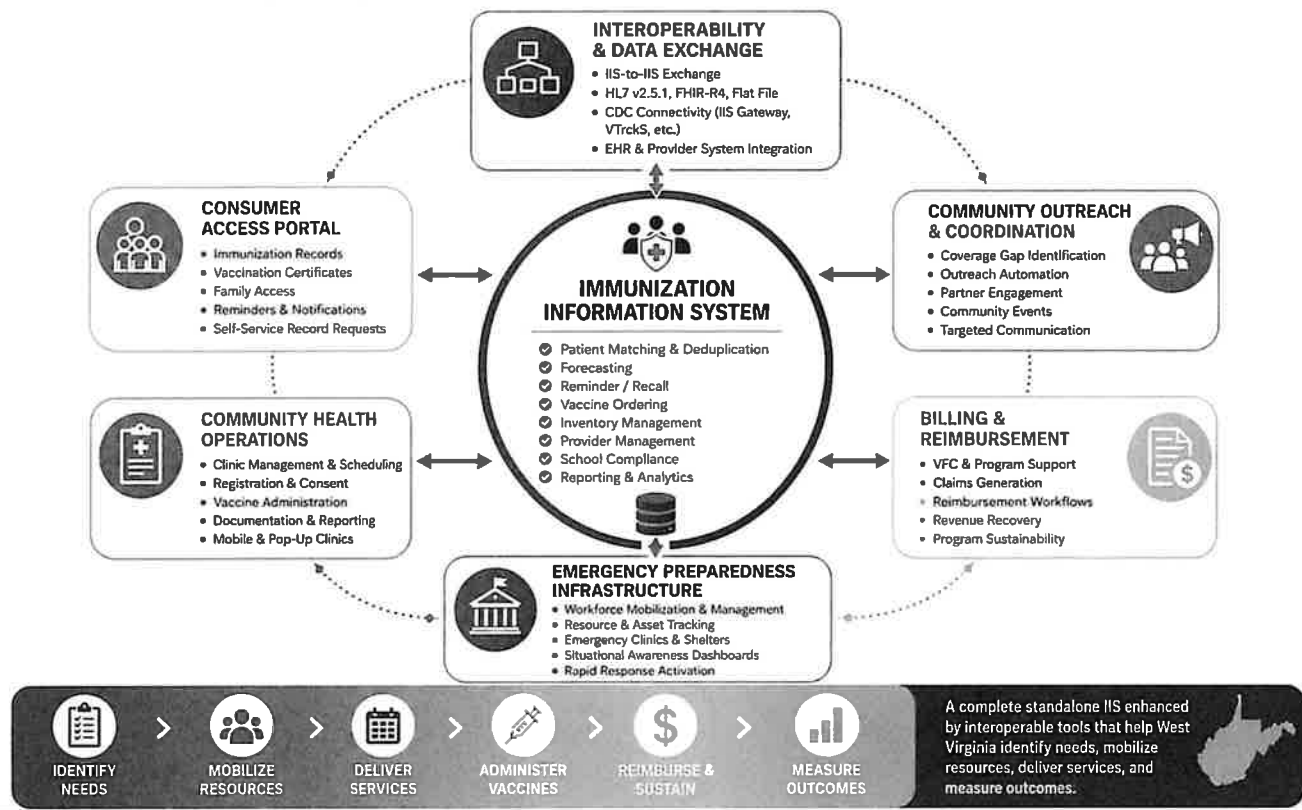
VAULT Technologies proposes OptimIIS, a purpose-built, cloud-native IIS that will serve as the authoritative CDC-compliant immunization registry for West Virginia. OptimIIS resides in VAULT's immunization program management ecosystem, an end-to-end operating system for healthcare and community health delivery that has been deployed in more than 40 states and jurisdictions by more than 3,000 public health organizations and providers and more than 70,000 simultaneous login users. OptimIIS manages patient records, vaccination

events, provider participation, data quality, clinical decision support, coverage reporting, and federal program compliance. Its parent ecosystem integrates four modules that extend the platform into the full operational capabilities WV needs most.

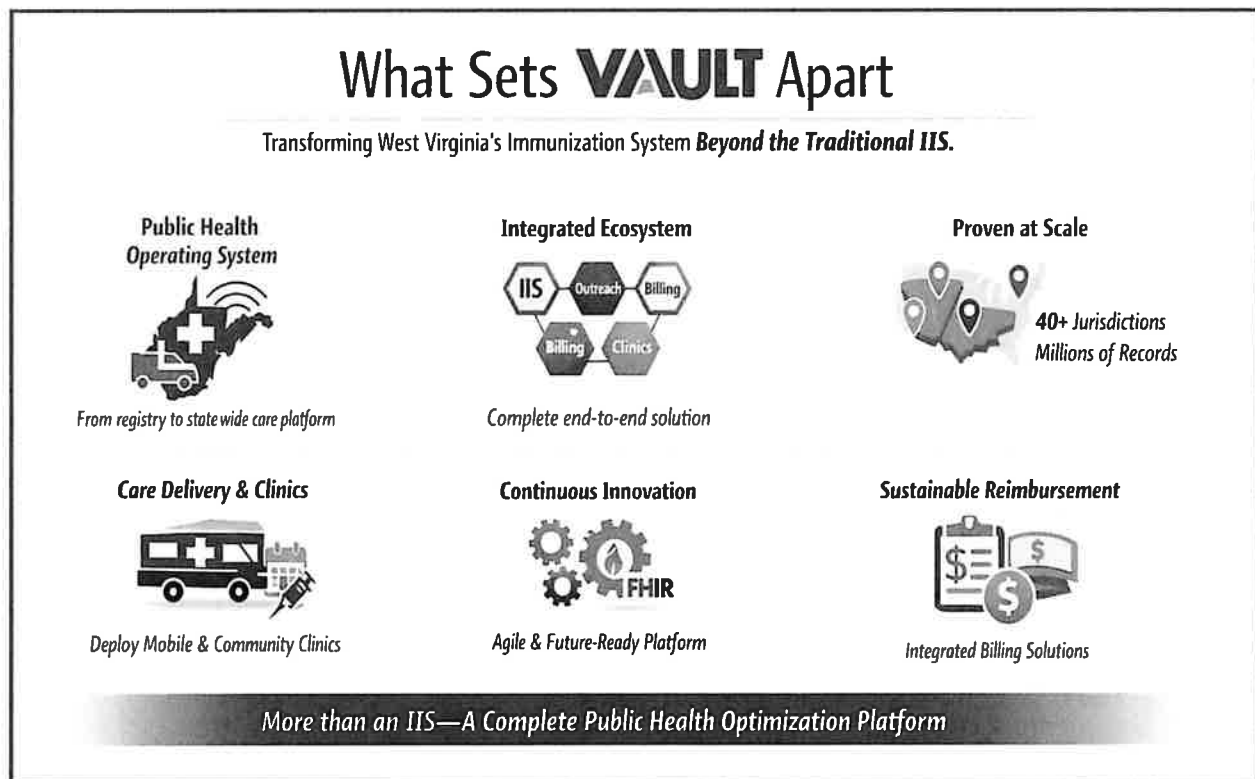
Module	What it does	Specific WV value
OptimIIS	Authoritative IIS registry: patient records, vaccination events, RBAC, deduplication, CDS, coverage reporting, VFC, HL7/FHIR	Manages WV's 3M records, 32M vaccinations, and 24,000 users; enforces §64-7-6 mandatory reporting
Interoperability and Data Exchange	Bidirectional interoperability engine: HL7 v2.5.1, FHIR-R4, flat-file, custom protocols; in production across 30+ state IIS systems	Supports WV's standard and non-standard interface landscape without a separate integration platform
Mass Community Health Application	End-to-end clinic operations: scheduling, check-in, encounter management, mass vaccination, documentation, and offline capability	Supports routine immunization programs, school clinics, mobile clinics, and surge response without new contracts or systems
Community Health Event Coordination	Outreach automation, workforce coordination, community-based service delivery	Identifies coverage gaps and coordinates targeted vaccination and public health initiatives statewide and for underserved populations
Seamless Third-Party Billing	VFC, commercial, Medicaid, and grant-funded billing integrated directly into encounter workflows	Improves program sustainability, reduces administrative burden, and eliminates separate billing systems
Emergency Preparedness Infrastructure	Resource management, workforce mobilization, asset tracking, emergency registration, shelter and clinic operations, situational awareness dashboards	Enables rapid activation of immunization, outbreak, and emergency response operations using existing infrastructure; no emergency-specific procurement or stand-up required
Consumer Access Portal	Secure resident access to immunization records, vaccination certificates, family records, reminders, record sharing, and self-service updates.	Reduces call volume and administrative burden; provides residents immediate access to records for school, employment, travel, and healthcare needs

A MODERN IIS AT THE CENTER OF PUBLIC HEALTH OPERATIONS

A complete ecosystem that extends the value of the IIS and drives action across West Virginia



WHY VAULT'S APPROACH IS SUPERIOR TO TRADITIONAL IIS ALTERNATIVES

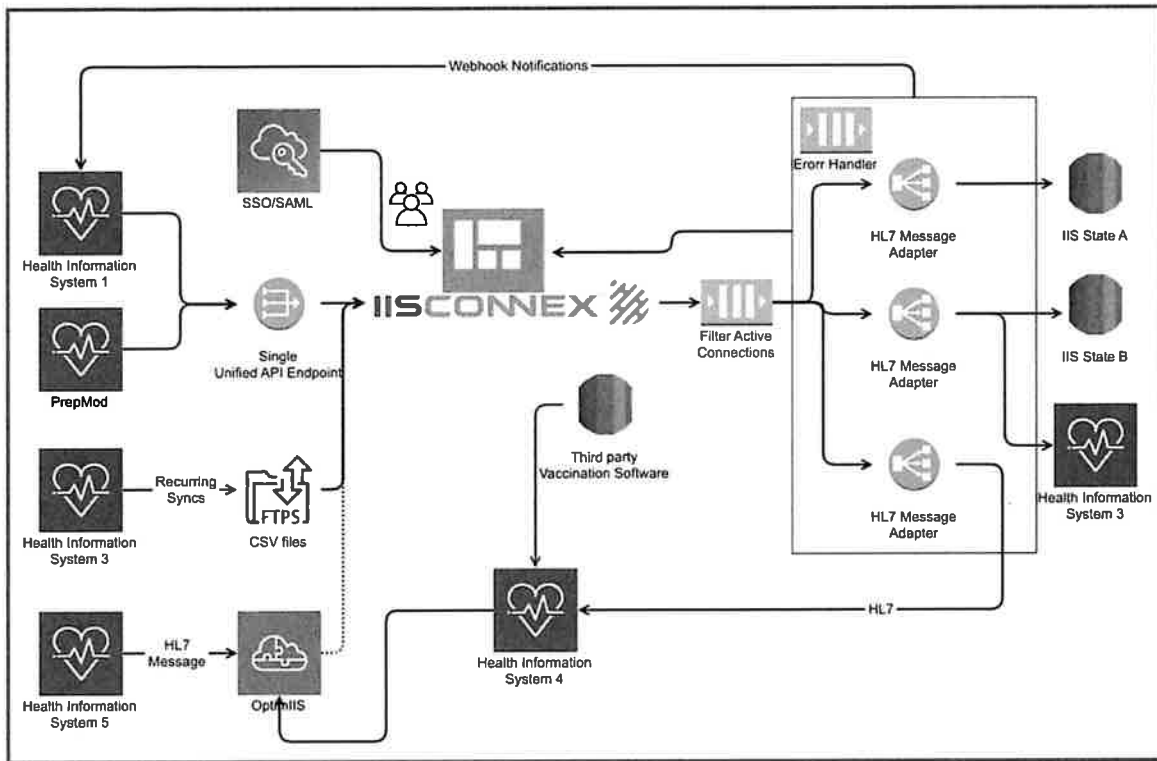


The IIS market has three distinct alternative approaches. VAULT's is demonstrably superior for West Virginia's specific environment on the following dimensions:

Dimension	Single-Application IIS (Registry-Only)	Platform/Process Engine (e.g., SSG Casetivity)	OptimIIS + OS Enhancements
Registry scope	System of record collects, stores, reports; no clinic operations, billing, or outreach	Configurable process engine layered on a registry; Massachusetts reference was a consumer portal layer on top of MIIS, not a full IIS replacement	Full public health operating system: registry + interoperability + clinic operations + outreach + billing in a unified data model
Non-standard interfaces	Not applicable	API-first but IIS interoperability depth not documented at scale	The interoperability module handles HL7, FHIR-R4, flat-file, and custom protocols; no interface cap; 30+ state IIS systems in production today
Uptime SLA	Not applicable	Not specified in available documentation	99.9% per month (~8.7 hours/year); error-budget monitored in real time
ACIP update timing	Not applicable	Not specified	Central ICE deployment on bi-weekly release cycle; all WV users updated simultaneously; no per-jurisdiction lag
Emergency response	Not applicable	No documented equivalent to offline clinic operations	OptimIIS and its operating system are built for emergency response proven at 70,000+ providers, deployed in 40+ states; offline capability standard
Separately billed add-ons	Competition separately bills Read Replica, Training LMS, DQA monitoring, and interoperability operations as add-on line items	Not fully documented	Read Replica, training, data quality dashboards, and analytics all included in base subscription

The West Virginia Department of Health seeks an IIS that securely collects, stores, and manages vaccination records, improves immunization tracking, enhances vaccination coverage, and supports data-driven public health decision-making. VAULT's proposed solution, OptimIIS, that resides in a larger public health operating

system, addresses each of those objectives with specific, production-tested capabilities. This section documents how. VAULT's approach to the goals and mandatory requirements in 4.2 is grounded in one principle: every claim in this proposal is backed by production evidence.



Proposal Architecture: How 4.2 Is Organized

Section	Topic	What VAULT delivers
4.2.1	CDC-Based Goals & Objectives	Nine CDC functional standard goals, each addressed with a capability table mapping specific OptimIS mechanisms to WV outcomes. Competitive comparisons to other IISs in 4.2.1.1, 4.2.1.3, 4.2.1.4, and 4.2.1.8.
4.2.2	WV-Specific Goals & Objectives	Eight WV-specific goals addressed with full sub-requirement coverage. 4.2.2.2 (Implementation Plan) and 4.2.2.5 (Read Replica) are fully expanded. Three-way competitive comparisons opens the section.
4.2.3	Mandatory Project Requirements	All 13 mandatory sub-sections addressed. Master deliverables tracking table consolidates all contractual obligations with timelines. SLA section directly compares VAULT's 99.9% monthly commitment to competitor's 99% annual commitment.
4.3	Qualifications & Experience	In Maryland, VAULT implemented and operated statewide immunization infrastructure supporting patient registration, vaccination documentation, provider onboarding, reminder/recall, inventory management, forecasting, reporting, and large-scale immunization operations. The platform supports a statewide network of providers, schools, pharmacies, and public health stakeholders and manages millions of immunization records and encounters.

Section	Topic	What VAULT delivers
		This implementation required coordination across multiple agencies and compliance with state and federal public health requirements, demonstrating VAULT's ability to operate at the scale and complexity required by West Virginia. In Alaska, VAULT supported the immunization ecosystem through interoperability services that connected providers, public health programs, and state systems. The project required stakeholder coordination, standards-based data exchange, and adaptation to unique public health and geographic challenges—experience directly applicable to West Virginia's distributed rural provider network. Through IISConnex, VAULT currently supports production immunization data exchange across more than 30 IIS environments nationwide. IISConnex performs many of the core interoperability functions required of a modern IIS, including HL7 message processing, patient matching, record reconciliation, routing, validation, error management, and interstate immunization data exchange. VAULT also developed and operates production immunization data exchange services for LabCorp, one of the nation's largest diagnostic laboratory organizations. This implementation required onboarding and managing connections with dozens of state immunization programs, supporting high-volume HL7 transactions, adapting to jurisdiction-specific requirements, and maintaining reliable, standards-based immunization reporting at national scale. The experience demonstrates VAULT's ability to support complex immunization interoperability environments involving multiple jurisdictions, varying business rules, and large transaction volumes. During the COVID-19 response, VAULT's immunization platform supported more than 70,000 healthcare providers across 40+ jurisdictions and facilitated tens of millions of vaccination encounters. The platform performed many of the same operational functions found within modern IIS environments, including registration, documentation, forecasting, inventory management, provider management, reminder/recall, reporting, consumer access, and interoperability.

Core Technical Architecture

OptimIIS is built on Ruby on Rails 8, AWS Aurora, and containerized microservices (ECR/ECS), deployed via ArgoCD/Terraform with zero-downtime releases. The microservices architecture means components scale and update independently. Enhancements to the CDS engine do not require downtime for the HL7 interface layer; a new FHIR endpoint does not affect inventory management. This is not a theoretical design: it is the architecture currently running Maryland's statewide deployment and Labcorp's thirty-state IIS interoperability network.

Architecture Element	VAULT Implementation	WV Operational Benefit
Application stack	Ruby on Rails 8 / PostgreSQL / AWS Aurora; microservices on ECS	Bi-weekly release cadence; component-level updates without system downtime

Architecture Element	VAULT Implementation	WV Operational Benefit
Hosting	AWS U.S.-based data centers; multi-AZ redundancy; elastic auto-scaling	Scales to WV's six-month benchmarks (8M+ QDPs, 1M+ VXUs, 200+ concurrent users) without manual intervention
Deployment	ArgoCD/Terraform infrastructure-as-code; CI/CD pipeline; SAST per commit	Every production change is auditable, reproducible, and reversible
Interoperability	IISConnex: HL7 v2.5.1 + FHIR-R4 + custom/flat-file transformation layer	Single engine handles all of WV's standard and non-standard interfaces
CDS engine	CDC-endorsed ICE on Docker/ECS via API Gateway and Lambda	CDSi logic deployed centrally; all WV providers receive ACIP updates simultaneously
Security	AES-256 at rest; TLS 1.2+/1.3; FIPS 140-2/3; FedRAMP-hosted; SOC 2 Type II; NIST SP 800-53	PHI protected at every layer; enforced by system design, not by policy compliance
Consumer access	FHIR-R4 APIs; identity-verified consumer portal	Patients access their own records; OEPS controls all identity proofing

Implementation Philosophy

VAULT's implementation of WV's new IIS is governed by a single non-negotiable constraint: §64-7-6 mandatory reporting must continue without interruption throughout the transition. Every element of the implementation plan, including the ten-phase parallel-operations model and the per-interface acceptance gates. The data migration sprint approach, the rollback procedures, is designed around this constraint. The legacy IIS does not go dark until OEPS issues formal written acceptance of the new system. Legacy interfaces will remain active until each replacement interface is individually validated.

Implementation Principle	What it means in practice
Zero reporting gap	§64-7-6 compliance maintained throughout. Legacy and new IIS operate in parallel. No provider redirected to the new system until their specific interface is tested, validated, and accepted.
Acceptance-gated progression	Each of the nine implementation phases requires written OEPS approval before the next phase begins. No phase advances on a vendor's internal assessment.
Data integrity first	Migration proceeds in iterative sprints with record-level reconciliation against legacy benchmarks. Error rate threshold <0.1% enforced before any sprint result loads to production.
No billing before Acceptance	Annual fees are prorated from the date of formal written Agency Acceptance. No recurring fees are assessed during implementation. No partial milestone payments.

Implementation Principle	What it means in practice
Rollback available throughout	Legacy system remains operational and accessible until formal Acceptance. Rollback to legacy is available at any point during the transition, not just theoretically but operationally maintained.

OptimIIS treats the CDC IIS Functional Standards as design requirements embedded in the platform architecture. Each of the nine goals below is addressed with the specific technical mechanism that satisfies it, the measurable outcome it produces for West Virginia, and where an alternative approach would be materially inferior.

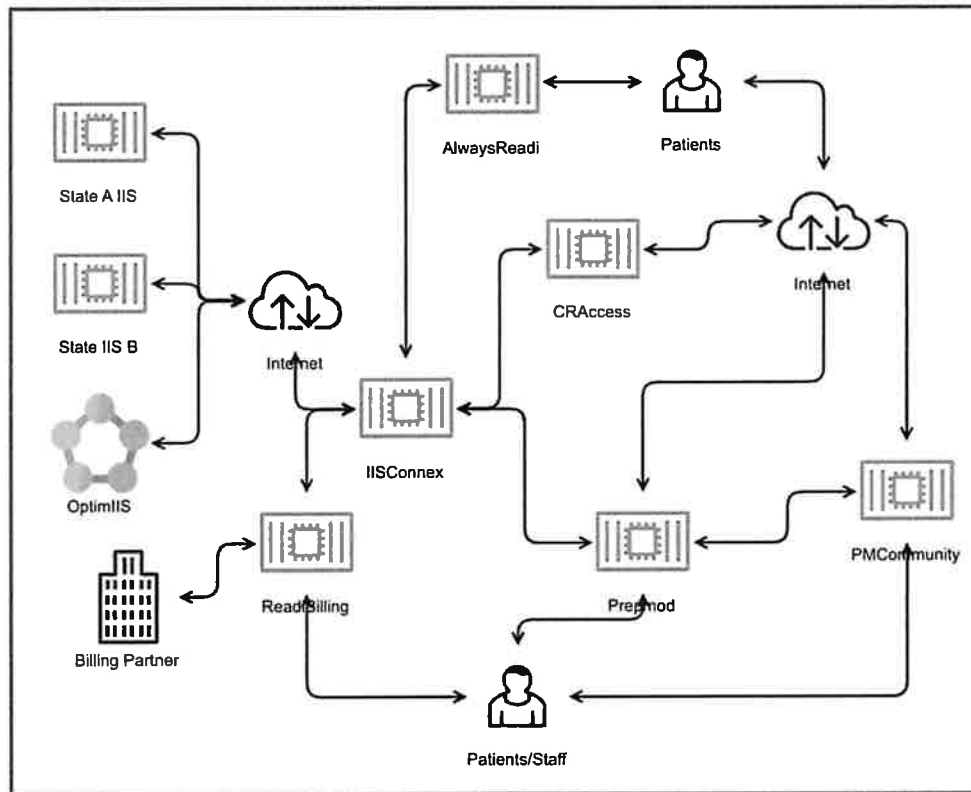
Overview: CDC Functional Standards and VAULT Capability Mapping

CDC Functional Standard	OptimIIS Capability	Outcome for West Virginia
4.2.1.1 Secure IIS	RBAC across 24,000 accounts; AES-256 at rest / TLS 1.2+1.3 in transit; NIST SP 800-53; FedRAMP-hosted on AWS; SOC 2 Type II; FIPS 140-2/3; continuous intrusion detection; immutable audit logs	PHI protected under HIPAA and WV law; OEPS controls all access autonomously
4.2.1.2 Data Quality	Real-time HL7 validation; deterministic + probabilistic deduplication across 3M patient records; SmartyStreets address validation; automated provider scorecards; DQA dashboards	Single, accurate longitudinal record per patient; data quality issues surfaced at source before federal reporting deadlines
4.2.1.3 Data Exchange	IISConnex: HL7 v2.5.1 + FHIR-R4 + non-standard flat-file/custom protocols; real-time ACK/NACK; self-service provider onboarding; interface monitoring dashboards; P1 alerts within 15 minutes	Bidirectional exchange across WV's standard and non-standard interface landscape; no interface cap; §64-7-6 reporting continuity
4.2.1.4 ACIP/CDS	CDC-endorsed ICE engine on Docker/ECS; CDSi-aligned rules; real-time forecast at point of care; centrally deployed ACIP updates; integrated with reminder/recall and coverage reporting	Consistent ACIP recommendations across all 24,000 users; ACIP updates deployed simultaneously to all providers
4.2.1.5 User Access	Configurable RBAC for all 7 WV role types; MFA for privileged roles; full lifecycle management; inactivity-based deactivation; consumer portal; immutable audit trail	State maintains complete access control; VAULT has no standing access to production data
4.2.1.6 Data Generation & Use	FHIR-R4 APIs; NIS/AFIX/ad hoc reports; VAERS-linked adverse event tools; county-level dashboards shareable with LHDs; reminder/recall engine; school compliance reporting	OEPS runs reports, recall campaigns, and adverse event workflows independently, with no vendor involvement
4.2.1.7 Federal Vaccine Programs	VFC eligibility at point of vaccination; lot-level inventory; auto-decrement on administration; VTrckS bidirectional automated exchange; ExIS-compliant data exchange; recalled lot flagging	Full VFC compliance; no manual federal reconciliation; automatic inventory accuracy
4.2.1.8 Emergency Response	Mass Vaccination Module: full offline capability; provider onboarding within hours; mass vaccination scheduling; integrated reporting to federal	WV activates emergency response without new contracts, new systems, or new integrations

CDC Functional Standard	OptimIIS Capability	Outcome for West Virginia
	authorities; proven at 70,000+ providers / 40+ states during COVID-19	
4.2.1.9 Emerging Technologies	FHIR-R4 in production; TEFCA roadmap active; AIRA/PHIA participation; bi-weekly release cadence; ArgoCD zero-downtime deployments; CDC Data Modernization Initiative alignment	WV receives standards updates on bi-weekly release schedule without disruptive upgrades

4.2.1.1 Establish and Maintain a Secure, Confidential IIS

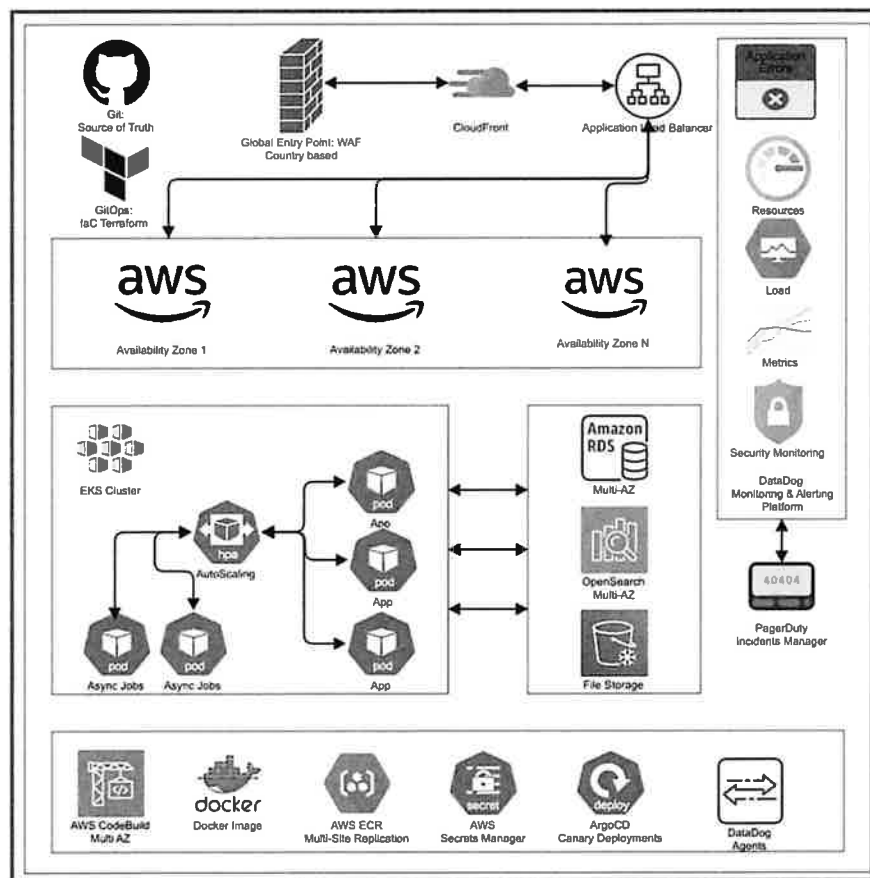
VAULT's modern technology foundation is powered by automated testing (RSpec, Capybara, Webmock, Jest) and Tailwind 3.x/4.x for responsive user experiences, enabling rapid, secure enhancements without disruption. This automated quality assurance framework ensures that every release is validated before reaching production, maintaining system stability and security across continuous delivery cycles.



OptimIIS treats security as a continuous operational discipline, not a static configuration. Every layer of the platform (infrastructure, application, data, and user) enforces security controls independently and in combination. OEPS has full visibility and control over the security posture of the IIS; VAULT has no standing access to production data outside of formally approved support tickets.

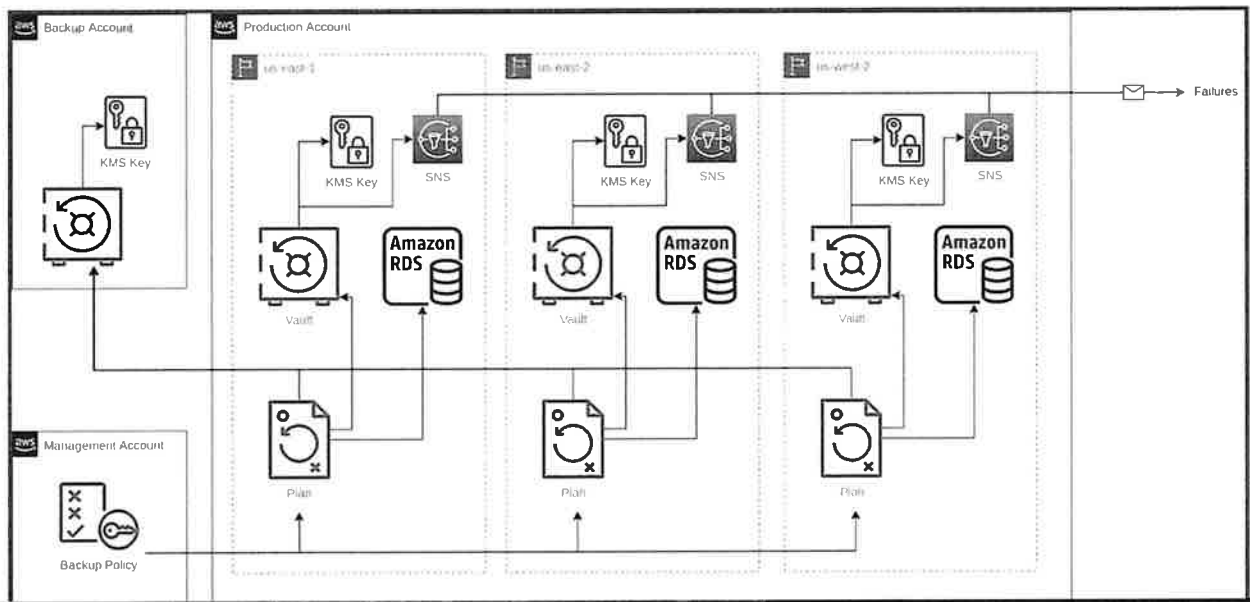
Standards compliance: NIST SP 800-53 aligned; FIPS 140-2/3 validated cryptographic modules (via AWS FIPS-validated suite); TLS 1.2 minimum / TLS 1.3 supported; SOC 2 Type II audit maintained; hosted on AWS infrastructure carrying FedRAMP Moderate authorization; HIPAA Business Associate Agreement in place.

CDC Standards 1.0 / 2.0 / 3.0: Physical and Digital Security, DR/BCP, and SLA



CDC Functional Standard	OptimIIS Capability	Outcome for West Virginia
1.0 Physical and digital security	24/7 biometric-monitored AWS data centers; AES-256 at rest; TLS 1.2+/1.3 in transit; network isolation and segmentation; automated security patching via controlled change management; third-party penetration testing annually per NIST 800-53; SAST	PHI protected at every layer; security controls enforced by platform design, not manual processes

CDC Functional Standard	OptimIIS Capability	Outcome for West Virginia
	integrated into CI/CD pipeline per commit; DAST quarterly	
1.1 Policies and procedures	Version-controlled documented policies covering access, data handling, security, privacy, workflows, and compliance. OEPS administrators modify configuration-level controls (RBAC rules, access thresholds, training gates) without vendor involvement. Policies reviewed on defined cycles.	OEPS owns policy governance; no change order required to update access rules or enforce policy changes
1.2 Technical infrastructure	Ruby on Rails 8 / AWS Aurora / microservices on ECS; ArgoCD/Terraform automated deployments; multi-AZ redundancy; elastic auto-scaling; Datadog APM continuous monitoring; zero-downtime releases	Infrastructure scales to support WV's documented six-month benchmarks: 200+ concurrent users, 8M+ QDPs, 1M+ VXUs
1.3 User training / security awareness	Role-based training required before account activation (configurable gate); training completion tracked per user; periodic refreshers; in-application contextual guidance; OEPS can pull training compliance reports at any time	No user gains system access without completing required training; OEPS enforces this through system configuration, not manual follow-up
2.0 Disaster avoidance	Multi-AZ AWS deployment; automated load balancing; elastic scaling for surge demand; chaos engineering exercises; documented runbooks for every failure mode	No single point of failure in production architecture; infrastructure designed for WV emergency response surge scenarios
2.1 / 2.2 BCP/DR and recovery planning	Formally documented BCP/DR aligned with NIST SP 800-61; Recovery Time Objective (RTO) of ≤4 hours and Recovery Point Objective (RPO) of ≤1 hour , both tested annually both tested annually and documented in the BCP/DR plan provided to Agency within 30 days of each test; RTO: ≤4 hours; RPO: ≤1 hour ; both are tested annually both tested annually; automated encrypted backups to geographically separate availability zone; failover tested quarterly; results provided to Agency within 30 days of test completion	Rapid recovery from any failure mode; OEPS receives documented annual test results
3.0 SLA	99.9% monthly production uptime; Datadog SLO dashboards with error-budget tracking; automated Slack and on-call paging when budget at risk; monthly capacity reviews	VAULT commits to a higher uptime standard than competitor's 99% annual commitment (equivalent to ~8.7 hrs/year vs ~87.6 hrs/year allowed)

**CDC Functional Standard****3.1 / 3.2 SLA infrastructure****OptimIIS Capability**

P1 incident: 24/7 SRE; 15-minute alert-to-triage commitment; blameless post-mortem documentation. Non-P1: 1-hour acknowledgment; 5-business-day resolution estimate. Planned maintenance: pre-approved by OEPS; outside business hours.

Outcome for West Virginia

Full SLA transparency: monthly reports delivered by 5th of each month; OEPS has real-time access to SLO dashboard

maryland4.2.1.2 Continuously Improve IIS Data Quality

Closed-Loop Data Quality Model

VAULT's data quality framework operates as a closed-loop model: data is continuously validated at the point of entry, monitored against CDC and WV-specific quality benchmarks, and improved through targeted provider feedback and training. Issues identified through monitoring and analytics are traceable to specific providers and error types, enabling OEPS to act before problems affect federal reporting.

Data quality metrics tracked include completeness (required demographic and vaccination fields populated), timeliness (speed of data submission and processing), and validity (consistency, accuracy, and absence of errors or outliers). These metrics are accessible through configurable dashboards at the system, organization, and provider levels, and are aligned with CDC IIS Functional Standards and WV-specific performance thresholds set by OEPS. OptimIIS enforces data quality at the point of entry. Records are validated before acceptance, not through downstream batch auditing. This is the architectural difference that prevents error accumulation in a high-volume mandatory-reporting environment like West Virginia's.

CDC Standards 4.1–4.5

CDC Functional Standard	OptimIIS Capability	Outcome for West Virginia
4.1 Deduplication	Deterministic matching (exact identifier fields: first name, last name, DOB, sex, SSN fragment) combined with Fellegi-Sunter probabilistic scoring across weighted demographic attributes (phonetic-normalized first/last name, DOB, sex, address components). Matches above the acceptance threshold are auto-linked; matches in the review band are queued for OEPS staff review, never auto-merged, never auto-merged; matches below the rejection threshold are treated as distinct records. OEPS controls all merge decisions and configures threshold values. Deduplication runs continuously on inbound data and nightly in batch on the full 3,000,000 patient record set.	All 3,000,000 WV patient records processed; OEPS retains control over record integrity decisions; no auto-merge risk
4.2 Data quality monitoring	Real-time dashboards showing completeness, timeliness, and validity by provider, organization, and county; configurable alert thresholds; automated exception reports; trend tracking over rolling periods	OEPS identifies provider-level data quality issues before they affect federal reporting, not after a quarterly batch review
4.3 Address standardization	SmartyStreets USPS-certified address validation at point of entry and in bulk against existing records; standardized county-level geocoding for WV's geographic coverage calculations	Reduces the geographic coding errors that cause miscounting in WV's county-level coverage rates
4.4 Provider feedback and training	Automated rejection summaries per provider with field-level error descriptions; data quality scorecards showing error rates over time; targeted training recommendations by error type; provider portal shows submission performance	OEPS targets training specific error types affecting specific providers, not generic compliance messaging. No separate DQA service is required.

CDC Functional Standard	OptimIIS Capability	Outcome for West Virginia
4.5 Federal and jurisdictional metrics	CDC IIS data quality metrics (completeness, timeliness, validity) tracked against WV-specific thresholds defined by OEPS; deviations surfaced in dashboards before annual reporting deadlines; configurable metric targets	OEPS controls quality thresholds; system alerts before federal submissions are due

Comparative advantage: VAULT includes real-time provider scorecards, automated error reporting, and data quality dashboards as core platform capabilities. No separate service contract is required.

4.2.1.3 Promote Electronic Data Exchange

State-Controlled, Policy-Driven Data Exchange

Unlike traditional IIS platforms, VAULT enables State-controlled, policy-driven data exchange, allowing West Virginia to define what data is shared, with whom, and under what conditions. This includes:

- What data is shared (e.g., vaccine type, demographic elements, or other attributes)
- With whom data is shared (e.g., specific providers, systems, or partner jurisdictions)
- Under what conditions data is exchanged, based on jurisdictional policies and program requirements

This capability is particularly valuable during public health emergencies, where the State may need to rapidly adjust data sharing rules to support coordinated response efforts while maintaining control over sensitive information. VAULT transforms interoperability from a technical function into a State-governed operational asset.

PME, the operating system that houses OptimIIS and IISConnex, VAULT's dedicated interoperability engine, is in production across 30+ state jurisdictions. This is the critical distinction: WV's interfaces would be managed by an existing, tested routing layer with multi-jurisdictional production experience. WV's non-standard interface landscape (flat-file, custom protocols, pharmacy, education, emergency response) is specifically served by this configurable transformation layer.

CDC Standards 5.1–5.4

CDC Functional Standard	OptimIIS Capability	Outcome for West Virginia
5.1 Data exchange standards	HL7 v2.5.1 (VXU, QBP/Z34, ACK/NACK) per CDC HL7 Implementation Guide v3.0+; FHIR-R4 (Immunization, Patient, Practitioner, Organization, Location resources); SMART on FHIR OAuth2; the ecosystem handles non-standard protocols (flat-file, custom formats) without bespoke development	WV's standard and non-standard trading partners supported through a single, maintained interoperability engine

CDC Functional Standard	OptimIIS Capability	Outcome for West Virginia
5.2 Partner/provider onboarding	Self-service onboarding portal with automated interface testing; HL7 validation at each step; readiness checklists and kick-off call workflow; provider scorecards post-onboarding; OEPS staff can onboard new partners without VAULT involvement for standard HL7 connections	No cap on monthly interface additions; providers can initiate onboarding independently
5.3 Interface monitoring	Real-time dashboards: message volume, rejection rates, latency, and synchronization status per trading partner; configurable alert thresholds; automated daily summary reports to OEPS; P1 interface failure triggers SRE alert within 15 minutes	OEPS detects submission drops or error spikes before they accumulate into data quality backlogs
5.4 Error investigation / resolution	Hold queue with P1/P2/P3 severity classification; assigned staff ownership per error; in-system correction and re-submission without provider re-send; full audit trail of resolution actions; provider notified of error with field-level descriptions	OEPS resolves interface errors with full workflow tooling, with no helpdesk tickets to VAULT required for routine error resolution

4.2.1.4 Ensure Delivery of Immunization Services Reflect ACIP Recommendations

Operational Workflow

1. Provider submits or views patient immunization record
2. System evaluates patient age, history, dose intervals, and sequence
3. ICE engine executes CDSi-aligned rules in real time
4. System determines dose validity and forecast status (due, overdue, complete, invalid)
5. Forecast is immediately displayed within clinical workflows and made available for reporting and outreach

For West Virginia, this ensures consistent, statewide forecasting across a diverse provider network, reduces missed vaccination opportunities, and supports improved coverage outcomes across rural and underserved populations.

VAULT implements ACIP forecasting using the CDC-endorsed Immunization Calculation Engine (ICE). This is the same reference implementation CDC uses to validate CDSi compliance. VAULT does not build custom forecast rules. ICE executes CDSi logic directly, running on Docker containers on AWS ECS proxied through API Gateway, with Lambda functions for low-latency processing. This eliminates the translation gap between CDC guidance and production behavior that exists with proprietary forecasting engines.

CDC Standards 6.1–6.2

CDC Functional Standard	OptimIIS Capability	Outcome for West Virginia
6.1 CDS functionality	ICE executes at point of care: patient record open, vaccination entry, assessment screen, or any forecast-relevant workflow trigger. Evaluates prior dose validity (timing, intervals, age, sequence), then produces due, overdue, complete, invalid, or upcoming status. Output surfaced in clinical workflows, reminder/recall engine, and coverage reporting, not just as a display.	Consistent, real-time ACIP-aligned forecasts for all providers across WV's 1,645+ site network; no site-specific rule configuration required
6.2 CDSi alignment	ICE implements CDC CDSi logic directly from published artifacts, with no custom rule for translation. ACIP schedule changes: VAULT monitors MMWR and VFC Resolutions; updates reviewed, validated against CDSi test cases, and deployed centrally through controlled release management; all WV users receive updated logic simultaneously.	WV providers never see a stale forecast after an ACIP schedule change; no manual per-site rule update required

4.2.1.5 Ensure Appropriate User Access to Data

Dual Access Model: Internal Users and Consumers

OptimIIS, within its accompanying ecosystem, supports a dual access model, enabling:

- Authorized internal users and IIS partners to access data appropriate to their roles and responsibilities
- Individuals, parents, and guardians to securely access their own immunization records

For consumers, the system provides secure, user-friendly access to immunization records, enabling individuals to retrieve official documentation for school enrollment, employment verification, travel, and healthcare coordination, while maintaining strict privacy and authentication controls. All consumer access is governed by State-defined policies and procedures, ensuring access is restricted to authorized individuals or their legal representatives.

VAULT manages the complete user access lifecycle for all 24,000 WV user accounts across seven role types, from provisioning and role assignment through inactivity-based deactivation, entirely through OEPS-administered RBAC controls. VAULT has no standing access to production data. This is a fundamental architectural guarantee, not a policy commitment.

CDC Standards 7.1–7.7 and 8.1

CDC Functional Standard	OptimIIS Capability	Outcome for West Virginia
7.1 Confidentiality policies	HIPAA-compliant data handling policies operationalized through system configuration: access restricted by role, organization, and data type; PHI encrypted at rest and in transit;	OEPS controls all policy parameters; no vendor involvement required for policy updates

CDC Functional Standard	OptimIS Capability	Outcome for West Virginia
	acceptable use policies enforced at login; all policies version-controlled and auditable	
7.2 Account management	Full lifecycle for all 24,000 accounts: provisioning (with training gate), role assignment, password policy, modification, and deactivation. Bulk operations are supported for seasonal school nurse onboarding (600 accounts), provider network changes, and emergency response activation.	OEPS manages all 24,000 accounts through self-service administrative tools; no tickets to VAULT for routine account management
7.3 Technical RBAC controls	Configurable roles for all 7 WV account types (Facility Client 10,000; Facility View 5,000; Organization Client 6,000; Organization View 1,000; Registry Client 300; Registry View 50; School Nurse 600; Vendor View 50); MFA required for privileged and configurable roles; session management with configurable timeout	OEPS defines all permission boundaries; permissions enforced by the platform, not by manual policy compliance
7.4 Policy-based access enforcement	Access rules enforced at the database layer: users cannot see records outside their organizational scope regardless of URL manipulation; data minimization enforced by system design	PHI access strictly limited to minimum necessary for each role; enforced automatically, not by user discipline
7.5 Partner/provider access	Differentiated access for: childcare/schools (school-entry compliance), health plans (population-level and member data), clinics/providers (patient-level clinical workflows), pharmacies (vaccination submission and query), community-based organizations	All WV partner types supported under a single RBAC framework; no separate portals or systems for different partner types
7.6 Training on data access	Training required before account activation (configurable gate); role-specific modules covering HIPAA responsibilities, system usage policies, and data handling; completion tracked per user; OEPS can pull compliance report at any time	No user gains access without documented training completion; OEPS enforces this through system configuration
7.7 Account deactivation / lifecycle	Automated inactivity-based deactivation after configurable period; manual deactivation by OEPS administrators; all lifecycle events logged in immutable audit trail; deactivation takes effect immediately across all sessions	Stale credentials cannot persist in a 24,000-account environment; OEPS controls deactivation parameters
8.1 Consumer access	Identity-verified consumer portal implementing identity proofing aligned with NIST SP 800-63A Identity Assurance Level 2 (IAL2) requirements, including knowledge-based verification and document-based verification options. OEPS configures all identity proofing parameters to align with WV statutory requirements and program policy. Patients access their own records for school enrollment, employment, travel, and healthcare documentation without contacting OEPS staff.	OEPS controls who qualifies for consumer access; patients self-serve without calling OEPS staff

4.2.1.6 Support the Generation and Use of IIS Data

Reminder, Recall, and Vulnerable Population Outreach

VAULT provides fully configurable, user-driven reminder and recall capabilities that enable authorized users to conduct outreach activities independently, without reliance on IIS technical staff or vendor support. Users can identify individuals due for upcoming vaccinations, overdue for required doses, or incomplete in vaccine series, generated using CDS and current immunization schedules.

Authorized users independently generate targeted reminder and recall lists, define criteria based on age, vaccine type, geography, provider, or population group, and initiate outreach campaigns through email, SMS/text messaging, or printable outreach lists. This supports rapid response to coverage gaps and emerging public health needs across West Virginia.

Coverage analysis capabilities enable the State to assess vaccination coverage and identify under-vaccinated and vulnerable populations. Users generate coverage reports across demographic groups, geographic regions, and provider sites; analyze vaccination rates by age, risk group, and population segment; and identify specific gaps and populations at increased risk requiring targeted intervention. This data-driven outreach model is integrated with CDS, ensuring outreach is based on accurate and current vaccine forecasting.

Self-Service Data Visualization

VAULT provides interactive dashboards and visualization tools that enable users to analyze, interpret, and act on IIS data without vendor support. Authorized users customize dashboards and visualizations directly by:

- Selecting data elements and metrics relevant to their program area
- Filtering by population, provider, geography, or vaccine type
- Adjusting timeframes and comparison views

Visualization capabilities are fully integrated with the system's reporting and query tools, allowing users to transition from dashboards to detailed reports or data extracts, validate and explore underlying data, and use visual insights to guide further analysis and targeted outreach. This enables the State to move from data to action without requiring vendor involvement.

OptimIIS surfaces IIS data through self-service reporting, FHIR-R4 APIs, configurable dashboards, adverse event management, reminder/recall campaigns, and school compliance monitoring, all controlled by OEPS without vendor involvement. No separate reporting service contract is required. This is qualitatively different from the competitor's model, which separately bills DQA, analytics, and data visualization services.

CDC Standards 9.1, 10.1–10.2, 11.1–11.2, 12.1–12.4, 13.1

CDC Functional Standard	OptimIIS Capability	Outcome for West Virginia
9.1 Standard and ad hoc reports	Pre-built reports aligned with CDC NIS-Child, AFIX, school compliance, VAERS, and federal submission requirements. Custom ad hoc report builder: configurable vaccine groups, age cohorts, geography, time period, organization, and	OEPS generates, schedules, and distributes all required reports without VAULT involvement; no report request queue

CDC Functional Standard	OptimIIS Capability	Outcome for West Virginia
	provider. Scheduled recurring reports (daily/weekly/monthly). Reports saved as reusable templates.	
10.1 Direct data access	FHIR-R4 APIs with SMART on FHIR OAuth2; SQL-accessible read replica for Data Bridge and BI tools; data extract capabilities for batch processing; all access governed by RBAC; VAULT not involved in individual query execution	WV Data Bridge team connects directly; BI tools connect directly; no VAULT mediation required
10.2 Data visualization	Configurable dashboards: county-level coverage maps, provider performance metrics, age-stratified vaccination rates, geographic coverage gaps. Shareable with LHDs in read-only format without granting system access. Mobile-accessible.	OEPS distributes coverage insights to LHDs without exposing system credentials; county health departments see their data in real time
11.1 Adverse event investigation	IIS records flagged against VAERS case criteria (vaccine type, lot number, age, administration date); investigators access complete immunization history, lot data, and provider attribution from a single record; investigation workflow tracks assigned staff and resolution status	WV can identify VAERS under-reporting by comparing IIS records against submitted VAERS reports
11.2 Adverse event documentation / VAERS	Pre-populated VAERS report drafts generated from existing IIS data; structured documentation workflow; VAERS submission tracking per provider; adverse event records linked to patient longitudinal record	Reduces manual data entry for providers; improves reporting completeness; supports WV's vaccine safety monitoring obligations
12.1 Coverage analysis	OEPS-controlled numerator/denominator configuration; ICE-based series completion logic; NIS-Child, AFIX, and WV-specific metrics; county-level breakdown; trend analysis over configurable time periods	Coverage rate calculations reproducible and defensible; OEPS adjusts population parameters without vendor involvement
12.2 Patient status management	Individual-level vaccination status across three views: provider (patients associated with their practice), site (all patients seen at a facility), and jurisdiction (statewide population). Status used in reminder/recall targeting and school compliance monitoring.	Operational and program-level oversight from the same data, with no separate systems for clinical and population views
12.3 Training for reporting	Role-based training on report generation, coverage interpretation, and data-driven decision-making; embedded contextual guidance in reporting workflows; OEPS-specific advanced training on numerator/denominator configuration	OEPS staff use reporting tools independently; no sustained vendor training dependency
12.4 School/childcare compliance	Immunization compliance tracking for enrolled populations; school-entry status by vaccine, grade, and school; exportable compliance lists for districts; integration with 4.2.2.3 exemption workflows	OEPS and school districts monitor compliance from the same system; no duplicate data entry between IIS and school compliance tools

CDC Functional Standard	OptimIIS Capability	Outcome for West Virginia
13.1 Reminder/recall	OEPS defines recall cohorts by any combination of vaccine type, dose number, age group, geography, provider, organization, coverage status, and insurance type. Campaigns run directly from IIS data without a separate extract. Multi-channel: mail, phone, electronic. Independent capability. No VAULT staff involvement is required. No VAULT staff involvement required.	OEPS launches statewide school-entry recall campaigns, outbreak response outreach, or provider-specific compliance messaging directly from the platform

4.2.1.7 Support Federal and Jurisdictional Vaccine Program Requirements

Federal and Jurisdictional Vaccine Program Management

VAULT supports federal and jurisdictional vaccine program requirements through a unified, end-to-end framework that combines program management, inventory control, supply chain operations, and federal system integration. OptimIIS's versatile, end-to-end ecosystem enables the State to manage all aspects of vaccine programs, from eligibility and compliance to distribution and reporting, with real-time visibility, configurability, and auditability.

The system provides configurable tools to define and enforce program procedures aligned with federal and State policies, including strong support for Vaccines for Children (VFC). Dose-level eligibility tracking ensures that each administered vaccine is accurately associated with the appropriate funding source. Integrated quality assurance capabilities enable rapid identification of non-viable doses and recalled vaccine lots.

VAULT delivers a robust, continuously updated vaccine inventory and supply chain management framework across provider and jurisdictional levels, including automated decrementing, reconciliation, tracking of returns, transfers, and wastage, and integrated ordering workflows. Secure, standards-based integration with federal systems such as CDC's Vaccine Tracking System (VTrckS) via ExIS ensures automated, compliant data exchange.

Program Management Operational Workflow

Configurable program rules and eligibility criteria align system behavior with VFC and other federal programs. Dose-level eligibility status is captured at time of administration and associated with the appropriate funding source. Non-viable vaccine administration is identified through viability parameter checks; recalled lot tracking enables rapid identification of providers and patients associated with manufacturer recalls. Inventory is automatically decremented on administration, with returns, transfers, and wastage tracked for full program accountability.

OptimIIS supports the full federal vaccine program compliance lifecycle, from VFC eligibility determination at the point of vaccination through automated bidirectional VTrckS exchange as an integrated capability as an integrated capability, not a separately purchased add-on.

CDC Standards 14.1–14.4, 15.1–15.4, 16.1–16.3

CDC Functional Standard	OptimIIS Capability	Outcome for West Virginia
14.1 Program procedures	VFC program procedures configurable by OEPS: eligibility categories, screening questions, consent workflows, and reporting rules. Jurisdiction-specific program policies implemented through configuration, not custom code.	OEPS administers VFC program parameters independently; changes do not require vendor change orders
14.2 Dose-level eligibility	VFC eligibility determined and documented at the dose level at point of vaccination: eligibility category (Medicaid, uninsured, underinsured, Native American/Alaska Native), provider VFC status, and dose funding source all captured and linked to the vaccination record.	Dose-level eligibility supports VFC audit compliance; funding source tracked for billing through ReadiBilling
14.3 Non-viable vaccine identification	System flags vaccine administrations with lot numbers that have been recalled, expired, or stored outside temperature parameters. Workflow assigns follow-up tasks to identified providers. Automatic alert generation for affected patient populations.	WV can rapidly identify patients who received non-viable doses and initiate follow-up without manual record searches
14.4 Recalled lot identification	Recalled lot numbers entered into the system generate automated flags across all associated vaccination records; provider-level reports of affected patients; coordination workflow for patient notification and revaccination	Statewide recall response coordinated from the IIS without manual data matching
15.1 Inventory management	Real-time lot-level inventory tracking across all 1,645+ provider sites; temperature excursion logging; lot expiration alerts; site-to-site transfer documentation; reconciliation of physical and system inventory	Single inventory record across all VFC and non-VFC doses; no separate inventory system required
15.2 Vaccine ordering	Provider-initiated orders within system-configured parameters (OEPS-defined order limits, eligible vaccines, and distribution rules); OEPS review and approval workflow; distribution documentation; order status tracking	Streamlined ordering reduces administrative burden on providers; OEPS maintains distribution control
15.3 Returns and wastage	Structured waste documentation: wasted dose quantity, lot number, reason code (expiration, storage failure, damage, etc.), and date. Provider-level and jurisdiction-level wastage reports. Audit-ready documentation for VFC accountability.	VFC wastage accountability supported at the dose level; no separate spreadsheet reconciliation
15.4 Automatic inventory decrement	Each vaccine administration event automatically decrements the corresponding lot in real-time inventory; no manual reconciliation; discrepancies between clinical activity and inventory levels generate alerts	Inventory accuracy is maintained automatically; clinical and inventory records are always synchronized
16.1 ExIS data exchange	ExIS-compliant VXU submission to CDC IZ Gateway on automated schedule; no manual extract/import process; OEPS notified of any submission failure within SLA window	WV meets federal immunization data reporting obligations automatically; no OEPS manual steps

CDC Functional Standard	OptimIIS Capability	Outcome for West Virginia
16.2 ExIS functionality updates	OptimIIS is updated to reflect ExIS specification changes through the standard controlled release process; modular interoperability architecture allows ExIS component updates without disrupting other system functions	WV remains compliant with evolving federal specifications without disruptive system-wide upgrades
16.3 VTrckS automated exchange	Bidirectional automated exchange: vaccine orders submitted to VTrckS, order status received, inventory updates reflected in system. No manual data entry. OEPS receives reconciliation reports showing VTrckS vs. IIS inventory alignment.	Complete VFC program accountability with zero manual federal reconciliation effort

4.2.1.8 Support Emergency Response for Vaccine-Preventable Disease Outbreaks

The ecosystem that houses OptimIIS was purpose-built for emergency response and was one of the first large-scale platforms deployed during COVID-19, supporting 70,000+ healthcare providers across more than 40 states. Emergency response capability is embedded in the IIS as a standing operational capability, not activated through a change order or supplemental contract. West Virginia can activate a mass vaccination event using the same system OEPS staff use for routine operations tomorrow.

CDC Standards (per RFP 4.2.1.8.1.1–4.2.1.8.1.6)

CDC Functional Standard	OptimIIS Capability	Outcome for West Virginia
4.2.1.8.1.1 Emergency preparedness plans	Pre-configured clinic templates, workflows, and user roles are aligned with WV's emergency preparedness plans, stored in the live system, and activatable immediately. Configurable eligibility rules, consent documentation, and data capture fields per emergency type. OEPS modifies templates directly, without raising a support ticket.	Emergency plans operationalized in the system, not stored in a separate document that must be manually transcribed into a new tool at activation
4.2.1.8.1.2 Expedited onboarding and data capture	New provider accounts created by OEPS within minutes; role-based access assigned immediately; no VAULT involvement required for standard account creation. Simplified registration and vaccination forms for emergency workflows. QR-code check-in for rapid patient identification.	New vaccination sites go live within hours, not weeks. Providers need only a browser and internet access
4.2.1.8.1.3 Training for emergency operations	On-demand training modules for emergency workflows; compressed role-based training tracks for newly onboarded providers; just-in-time contextual guidance embedded in clinical screens; intuitive browser-based interface minimizes training requirements. Maryland reference: providers	New partners operational within hours of account creation; data quality maintained even with first-time users

CDC Functional Standard	OptimIIS Capability	Outcome for West Virginia
	onboarded and operational within compressed timelines during large-scale vaccination efforts.	
4.2.1.8.1.4 Offline vaccine administration	Full offline capability across all PrepMod workflows: patient registration, check-in, consent, vaccine administration, lot documentation, and adverse event capture. Data stored securely on device. Automatic synchronization with full validation and conflict resolution on reconnect.	WV's rural mobile clinics operate without connectivity gaps; no dose documentation is lost in field settings
4.2.1.8.1.5 Scheduling and operational tools	Integrated high-volume appointment scheduling: unlimited appointment slots, real-time capacity management, walk-in and appointment-based workflows, configurable eligibility filters. Scheduling synchronized with check-in, vaccine administration, and inventory workflows in one system.	OEPS manages mass vaccination scheduling without a separate scheduling tool; real-time throughput visibility at all sites
4.2.1.8.1.6 Public health reporting	Real-time dashboards during emergency operations: vaccination counts by site, provider, age group, and geography; coverage progress against targets; VAERS-compatible adverse event capture throughout emergency operations; automated federal submission via ExIS/VXU.	OEPS reports to federal and jurisdictional authorities in real time during emergency operations, with no end-of-day batch export required

4.2.1.9 Participate in and Prioritize Emerging Technologies and Standards

VAULT's emerging technology posture is defined by two principles: production first, roadmap second. FHIR-R4 is in production today, not on a roadmap. The CDC Data Modernization Initiative alignment is delivered through architectural choices (microservices, API-first, bi-weekly releases) that are already operational, not through future commitments.

CDC Standards (per RFP 4.2.1.9.1.1–9.1.3)

CDC Functional Standard	OptimIIS Capability	Outcome for West Virginia
4.2.1.9.1.1 Modernization coordination	Active participation in AIRA IIS Managers Collaborative and HL7 Immunization Working Group. VAULT staff have presented IISConnex multi-jurisdictional interoperability architecture and production operational data at AIRA technical sessions. IISConnex routes real-time immunization data on behalf of Labcorp's national laboratory network and other submitting organizations to 30+ state IIS jurisdictions, processing production HL7 v2.5.1 message volumes at national scale and	WV benefits from VAULT's participation in shaping, not just adopting, emerging standards

CDC Functional Standard	OptimIIS Capability	Outcome for West Virginia
	making VAULT one of the largest non-state contributors to the IIS interoperability ecosystem. Bi-weekly sprint cadence ensures rapid incorporation of new CDC guidance into production deployments.	
4.2.1.9.1.2 Modernization priorities alignment	CDC Data Modernization Initiative alignment: VAULT has completed FHIR-R4 IIS production deployments across multiple jurisdictions, with OptimIIS operating as a production FHIR-R4 server for immunization resource exchange (Immunization, Immunization Recommendation, Patient, Practitioner, Organization, Location). Architecture is fully API-first with cloud-native AWS infrastructure, ArgoCD zero-downtime deployments, and microservices enabling independent component scaling, all consistent with the North Star Architecture framework. FHIR-R4 endpoints are available for EHR and HIE connections on day one of the WV contract.	WV can connect modern EHR partners via FHIR-R4 on day one; legacy HL7 connections maintained through IISConnex simultaneously
4.2.1.9.1.3 Standards development participation	VAULT contributes production implementation experience to HL7 immunization working groups, AIRA technical committees, and PHIA interoperability initiatives, grounding standards discussions in real-world operational constraints from 30+ IIS jurisdictions. TEFCA alignment: VAULT is targeting QHIN technical on-ramp evaluation by end of 2026, aligned with CDC's published TEFCA immunization data exchange implementation timeline. FHIR Immunization IG updates are incorporated into OptimIIS releases within 60 days of CDC finalization.	WV's IIS provider benefits from vendor that shapes standards rather than waiting to implement them

Standards Engagement and Production Evidence

VAULT actively participates in national initiatives that shape IIS and public health technology standards, including:

- American Immunization Registry Association (AIRA): IIS Managers Collaborative and technical committee participation; VAULT staff have presented at AIRA conferences on interoperability implementation
- Association of Immunization Managers (AIM): ongoing collaboration on jurisdictional policy alignment and emerging capability deployment
- Health ISAC: information sharing and analysis on security threats and vulnerabilities relevant to public health systems

- **HL7 Immunization Working Group:** contributing production implementation experience to guide standards development; VAULT's FHIR-R4 deployments inform real-world feedback to the standards body

This participation ensures VAULT is not only adopting standards as they are finalized but actively contributing to how those standards are shaped in ways that reflect the operational realities of production IIS environments.

Proven Operationalization of Emerging Standards

VAULT operationalizes emerging standards in production, not on roadmaps. Key evidence:

- **FHIR-R4:** in production across multiple jurisdictions today. West Virginia can connect modern EHR partners via FHIR-R4 APIs on day one
- **CDC Data Modernization Initiative:** completed FHIR-R4 IIS production deployments aligned with DMI objectives across multiple jurisdictions
- **TEFCA:** roadmap active with targeted Q4 2026 participation. West Virginia would be connected to the national health data network without a separate integration project
- **IISConnex:** operationalizes both HL7 v2.5.1 and FHIR-based data exchange across 30+ state IIS jurisdictions in production, demonstrating the ability to translate emerging standards into scalable, real-time solutions at national scale
- **Parallel HL7 + FHIR architecture:** native support for both current (HL7 v2.5.1) and emerging (FHIR-R4) frameworks through a single interoperability platform. West Virginia maintains existing HL7 connections while adopting FHIR without disruptive overhauls

Coordinated Modernization: Maryland Production Evidence

In Maryland, VAULT implemented a structured modernization coordination model that included weekly alignment sessions with State leadership, ongoing backlog prioritization aligned with evolving federal requirements, and iterative delivery of enhancements through bi-weekly release cycles. This model, activated in 2020, demonstrates VAULT's ability to coordinate continuous modernization efforts in a production statewide IIS environment, ensuring West Virginia can implement enhancements efficiently and remain compliant with evolving CDC IIS Functional Standards without disrupting ongoing operations.

Section 4.2.1 Summary: CDC-Based Goals VAULT addresses all nine CDC IIS Functional Standard goals through specific, production-tested capabilities in the OptimIIS ecosystem. Every capability described in this section is operational in production environments today. Where the RFP asks the vendor to describe how its approach is superior, VAULT has provided direct comparisons to the competitor using publicly available information. Key advantages: higher uptime SLA; faster ACIP updates; no cap on interface additions; no separate DQA/training/analytics service billing; integrated emergency response; FHIR-R4 in production.

West Virginia's IIS operates in a regulatory and operational environment that distinguishes it from most states. Three characteristics shape every element of Comparative advantage over other IISs:

1. WV Administrative Code §64-7-6 mandates reporting of ALL immunization administrations statewide, a universal high-compliance requirement exceeding typical IIS participation norms. Every interface, validation rule, and workflow in the proposed system must enforce this obligation continuously.
2. WV's interface landscape is non-standard. Beyond HL7 and FHIR, the IIS connects to licensing systems, pharmacy platforms, education systems, and emergency response programs through flat-file and custom protocol formats. A system built only for standard HL7 is insufficient.
3. WV's geography creates structural access challenges. With approximately 445 public and 1,200 private VFC providers spread across rural and underserved communities, the IIS must support more than data collection; it must support care delivery mobile clinic activation, and provider onboarding at scale.

Scale context: The system currently manages approximately 3,000,000 patient records, 32,000,000 vaccination records, and 24,000 user accounts across seven role types. In any six-month period, the system handles 200+ concurrent non-HL7 users, 8,000,000+ QDP messages, 1,000,000+ VXUs, and 1,500+ VXQs. VAULT's proposed solution is sized and tested at this scale.

Competitive Landscape: Where VAULT's Approach is Superior

OptimIIS's ecosystem outperforms other IIS platforms across every dimension that matters for West Virginia's operating environment. The technology foundation is the clearest differentiator. OptimIIS is built on Ruby on Rails 8 and AWS microservices with zero-downtime deployments via ArgoCD and a bi-weekly release cadence. Other IIS vendors in the market rely on legacy single-application architectures built on older technology stacks, which limits their ability to deploy updates without service disruption and constrains how quickly they can respond to evolving state and federal requirements. That architectural difference cascades into every operational capability that follows.

Availability commitments reflect the same gap. VAULT commits to 99.9% uptime measured monthly — equivalent to approximately 8.7 hours of allowed downtime per year — with automated SRE alerting within 15 minutes of any threshold breach. Other vendors offer annual SLA commitments that allow significantly more downtime and obscure poor-performing periods by averaging across the calendar year. West Virginia's mandatory §64-7-6 reporting environment makes monthly measurement the only meaningful standard; a provider that cannot submit records for 12 hours in January cannot be made whole by an otherwise strong year. ACIP forecasting updates follow the same pattern. OptimIIS deploys schedule changes through the CDC-endorsed ICE engine via controlled release management, reaching all West Virginia users simultaneously. Other IIS vendors require up to 45 days after CDC confirmation, and some offer no documented deployment timeline at all. In a state where providers across 1,645 or more sites must apply identical clinical decision support, simultaneous centralized updates are operationally essential rather than a differentiating feature.

Where other IIS platforms stop at standard HL7, IISConnex handles HL7 v2.5.1, FHIR-R4, flat-file, and custom non-standard protocols natively with no cap on interface additions. Other IIS platforms require custom vendor engagement for non-standard connections, creating bottlenecks that West Virginia's diverse provider network — spanning hospital systems, independent practices, school nurses, and community health workers — cannot absorb.

Beyond interoperability, the functional scope of what VAULT delivers is substantially broader. OptimIIS's ecosystem provides end-to-end scheduling, check-in, encounter management, and offline capability. The billing module integrates private and VFC billing, claims generation, and reimbursement workflows directly into the encounter record. The Read Replica for analytics and reporting is priced separately in Attachment A (Lines B2, D4–D5), with production systems fully isolated and replication lag of five minutes or less. Role-based live training, on-demand

video libraries, digital manuals, and in-application guidance are included with no separate LMS fees. An integrated consumer portal gives West Virginia residents access to their own immunization records with OEPS controlling identity proofing requirements. Other IIS vendors either exclude these capabilities entirely, offer them only through separately priced add-ons, or provide no documented offering at all — leaving states to negotiate and fund each function individually.

The emergency response record makes the case in concrete terms. The operating system where OptimIIS resides was among the first large-scale platforms deployed nationally during COVID-19, supporting more than 70,000 healthcare providers across more than 40 states. Other IIS vendors participated in COVID-19 response but without the operational depth like offline capability, mass vaccination scheduling, pre-registration, automated prioritization, community partner mobilization, and real-time reporting that OptimIIS's ecosystem provided. For West Virginia, that proven emergency response capability is embedded as a standing feature of the contract, not something that would need to be activated through a new procurement or integration effort when the next public health emergency arrives.

4.2.2.1 System Optimization, Innovation, and Interoperability

4.2.2.1.1 Continuous Improvement and Shared Enhancements

OptimIIS enhancements follow a three-stage model: origination, evaluation, and platform-wide deployment.

Stage	Process	WV Outcome
Origination	Enhancements identified through OEPS feedback, HL7 error analytics, provider support patterns, and CDC guidance changes. WV can submit requests directly through the account management team at any time.	OEPS has a direct channel to influence product direction, not just a seat in a consortium queue.
Evaluation (4.2.2.1.1.1)	Formal product management review: cross-jurisdictional applicability, CDC/NIST alignment, architectural fit, user group input (quarterly at minimum). WV participates in evaluation sessions.	OEPS input shapes which enhancements reach the platform, not just WV-specific customizations.
Release (4.2.2.1.1.2)	Bi-weekly sprints → UAT with jurisdictional stakeholders → controlled release Dev→Test→Production via ArgoCD/Terraform. Major enhancements: 5 business days advance notice; live training + recordings provided.	Predictable delivery cadence; OEPS staff prepared before deployment.
Communication (4.2.2.1.1.3)	Detailed release notes per cycle; roadmap reviews with account team; quarterly user group meetings; in-application guidance for new capabilities.	OEPS never learns about a system change after the fact.

Why VAULT's shared enhancement model is superior to alternatives: VAULT's model delivers shared enhancements to all jurisdictions at no additional cost as part of the base subscription. The same innovation that benefits Maryland benefits West Virginia.

Documented shared enhancement examples relevant to WV's environment (4.2.2.1.1.4):

1. HL7 error hold queue workflow improvements: structured severity classification (P1/P2/P3), automated provider notification, and error resolution tracking. Deployed across multiple jurisdictions including

Maryland DOH. Outcome: structured hold queue replaced ad-hoc provider callback cycles; P1/P2 errors resolved by OEPS staff within the same business day without requiring provider re-submission. Directly addresses WV's high-volume mandatory HL7 reporting environment under §64-7-6.

2. Bulk provider/facility/user activation and deactivation: batch processing of large provider networks. Directly addresses WV's 1,645+ provider network management needs.
3. Automated CVX/MVX/NDC code set synchronization: CDC code set updates deployed centrally without manual per-jurisdiction steps. Eliminates the lag that causes validation failures during ACIP schedule transitions.
4. Coverage reporting with configurable numerator/denominator logic, with OEPS-defined population parameters saved as reusable templates, without vendor involvement.
5. School nurse roster enhancements: classroom-level grouping, bulk compliance workflows, exportable compliance lists for school districts.

Additional cross-jurisdictional enhancement examples deployed to all customers at no additional cost:

- School-Based Clinic Workflow Enhancements: introduction of check-in and check-out functionality for school-based clinics, improving tracking of student flow and operational visibility during clinic events
- Streamlined Staff Management for Clinic Operations: simplification of workflows for adding and managing staff within clinic rosters, improving efficiency in onboarding and scheduling clinic personnel
- Enhanced Data Visualization for Billing and Reporting: improvements to data visualization capabilities for customers using billing modules, enabling better insight into performance, revenue, and service delivery
- Expanded Interoperability through IISConnex: development of multi-state data exchange capabilities, enabling seamless interoperability across jurisdictions at no additional cost to participating jurisdictions.

In prior implementations VAULT has delivered enhancements that directly improved operational performance. Examples of outcome-proven improvements deployed across the platform include: HL7 error handling workflow improvements that reduced provider submission errors through structured severity classification and automated resolution workflows; coverage reporting enhancements that improved visibility into coverage gaps and population health trends; and provider onboarding workflow improvements that streamlined participation and reduced submission errors across diverse provider types.

4.2.2.1.2 HL7 Error and Hold Queue Management

West Virginia's mandatory §64-7-6 reporting environment means HL7 errors are not routine inconveniences. They represent gaps in legally required reporting. OptimIIS handles this through a structured, severity-classified error management workflow that eliminates the ambiguity of traditional pass/fail HL7 processing.

HL7 Error Management Capability	VAULT Implementation	
Inbound message validation	Real-time structural validation, code set enforcement (CVX/MVX/NDC), segment-level completeness checks, and business rule validation before any record is created or updated	Other IISs validate messages but reserves the right to reclassify tickets post-discovery, meaning response may shift from defect to feature request post-discovery.
ACK/NACK processing	Immediate structured ACK (acceptance) or NACK (rejection)	Not applicable

HL7 Error Management Capability	VAULT Implementation	
	with specific HL7 error codes and human-readable descriptions; trading partner notified in real time	
Hold queue management	OEPS staff view held messages by severity (P1/P2/P3), provider, error type, and submission date. Errors assigned to staff, corrected in-system, and re-submitted without re-sending from the provider. Full audit trail.	Not applicable
Provider feedback loop	Automated rejection summaries per provider with specific field-level error descriptions; data quality scorecards showing provider error rates over time; targeted training recommendations Other IISs separately bill DQA service provides periodic Provider Detail Error Reports and multi-week corrective action cycles	
P1 interface failure alerting	Automated alert to VAULT SRE on-call within 15 minutes of detected interface failure; OEPS notified simultaneously; runbook-driven resolution with post-mortem documentation	Not applicable

4.2.2.1.3 Automated Code Set Synchronization (CVX/MVX/NDC)

CVX, MVX, and NDC code set synchronization is automated in OptimIIS, with no manual steps; no jurisdiction-level action required. VAULT monitors CDC published updates, validates against the current production code set, tests for impact on existing records and validation rules, and deploys through the controlled release pipeline. OEPS receives advance notice before any code set change affects production validation behavior.

4.2.2.1.4 Bulk Provider/Facility/User Management

OEPS administrators manage provider activation, deactivation, and role updates through batch operations, with no need to process accounts individually. Bulk operations support:

- 4 Activation/deactivation of groups of providers, facilities, or user accounts based on uploaded files or query-defined cohorts
- Role reassignment across organizational units (e.g., re-mapping 600 School Nurse accounts at the start of each academic year)
- 5 Program enrollment updates: adding or removing providers from VFC, school, or other program participation in bulk
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7. Audit-compliant logging of all bulk operations with user attribution and timestamp

4.2.2.2 Implementation Plan

OEPS seeks a seamless transition from the existing IIS to a new system. This section describes VAULT's comprehensive, end-to-end implementation methodology. This includes project management, environment setup, system configuration, data migration, interface development, training, and legacy decommission. Where alternative approaches exist, VAULT identifies why its approach is superior.

Implementation Philosophy: Parallel Operations and Zero-Gap Reporting

The single most important design principle in VAULT's implementation approach is continuous compliance with WV Administrative Code §64-7-6 throughout the entire transition. Legacy and new systems operate in parallel: the legacy IIS remains live, HL7 interfaces remain active, and providers experience no interruption until OEPS issues formal written Acceptance of the new system. This is not a cutover approach. It is a progressive migration with formal gating.

Risk Scenario	Traditional IIS Migration (others)	VAULT Parallel-Operations Approach
§64-7-6 reporting continuity	Cutover date creates a window where providers must submit to the new system before interfaces are fully validated; gap in mandatory reporting is possible	Legacy interfaces remain active until each new interface is individually tested, validated, and accepted. No gap is possible
Data migration errors	Single migration event; errors discovered post-cutover in production affect live operations	Iterative data quality sprints with record-level reconciliation in test environment; error rate threshold enforced before any load proceeds to production
Provider disruption	Providers notified of cutover date and required to redirect submissions; training and support concentrated at go-live	Providers continue submitting to existing system during migration; transition to new system confirmed per trading partner before cutover
Rollback capability	Once data is migrated and interfaces cut over, rollback requires significant effort and coordination	Legacy system remains operational throughout; rollback to legacy is available until formal Agency Acceptance; rollback procedures documented and tested before go-live

4.2.2.2.1 Project Management Strategy and Timeline

Dr. Montressa Washington, PMP, PhD, MBA — OCM & Training Manager / Functional Manager

Role: OCM & Training Manager / Functional Manager **Total Years Experience:** 20+ years

Years Experience with VAULT: 3

Key Qualifications: Dr. Montressa Washington holds a PhD in Management, an MBA, and is a certified Project Management Professional (PMP). She brings more than 20 years of experience in organizational transformation, change management, and technology adoption across federal, state, and enterprise environments. Her expertise spans stakeholder engagement, training strategy, user adoption planning, and strategic communications, the full spectrum of capabilities required to successfully transition West Virginia to OptimIIS. Dr. Washington brings direct public health systems experience, having served as Implementation Lead and OCM Manager on multiple statewide health technology deployments, supporting provider networks, state agencies, and community-based organizations through complex system transitions.

Project Experience #1 — Maryland Department of Health OCM Lead / Implementation Manager | January 2021

– *Present* Leads organizational change management and implementation coordination for VAULT's statewide engagement with the Maryland Department of Health. Responsible for stakeholder engagement strategy, user adoption planning, and ensuring successful platform transitions across a diverse statewide provider network including hospitals, local health departments, schools, and community organizations. Develops and oversees change readiness assessments, communication plans, and adoption support activities through weekly collaboration sessions with State leadership and monthly provider feedback reviews.

Project Experience #2 — Labcorp / IISConnex Functional Lead / Stakeholder Engagement | January 2023 –

Present Supports functional coordination and stakeholder engagement for VAULT's IISConnex engagement with Labcorp, managing the organizational and operational dimensions of onboarding Labcorp's provider network to a centralized, multi-jurisdiction immunization data exchange platform. Responsible for workflow documentation, provider communication strategies, and ensuring Labcorp's operational teams could successfully adopt and sustain bidirectional data exchange processes across more than 30 state IIS jurisdictions

Working in close partnership with the Agency's designated Project Manager, Dr. Washington will serve as VAULT's primary point of contact throughout the project lifecycle, responsible for day-to-day execution across planning, scheduling, resource coordination, risk mitigation, and stakeholder communication. Specifically, she will:

- Coordinate with the Agency's Project Manager on priorities, timelines, and deliverables
- Lead regular status meetings, sprint-level working sessions, and milestone reviews
- Manage the project schedule and track dependencies
- Identify and mitigate risks through structured risk management practices
- Ensure adherence to quality, security, and compliance standards
- Facilitate issue resolution and escalation as needed

VAULT's project management methodology follows a hybrid Agile/governance model: bi-weekly development sprints operate within a formal milestone approval framework, with each phase requiring written Agency sign-off before the next begins. Issue and risk tracking are maintained transparently in Jira or Agency-approved tooling, ensuring all project activities remain well-documented and aligned with the approved Project Plan.

#	Phase	Key Activities	Duration	Acceptance Gate
1	Project Initiation & Planning	Kickoff; stakeholder alignment; requirements validation with OEPS; WV-specific configuration parameters documented; project plan finalized; interface inventory completed; legacy	Weeks 1–4	Written OEPS approval of Project Plan, Interface Inventory, and Migration Scope

#	Phase	Key Activities	Duration	Acceptance Gate
		system access established for data profiling		
2	Environment Setup	Dev, Test/UAT, and Production environments provisioned on AWS under ArgoCD/Terraform; security configuration per OMIS/WVOT baseline; VPN and access controls established; environment-specific RBAC configured	Weeks 3–6	OEPS and OMIS sign-off on environment security configuration
3	System Configuration	WV-specific workflow configuration: §64-7-6 mandatory reporting rules; all 7 RBAC role types mapped; HL7 validation thresholds; school nurse workflows; exemption type configuration; VFC program parameters; coverage reporting population definitions	Weeks 5–12	OEPS UAT sign-off on configuration spec; functional walkthrough completed
4	Data Migration: Initial Loads	ETL extraction from legacy system; field mapping for WV-specific data structures; initial load into test environment; record-level reconciliation of patient counts (~3M), vaccination counts (~32M), and provider data (~1,645 providers) against legacy benchmarks; error rate must be <0.1% before progression	Weeks 8–16	OEPS-approved reconciliation report; error rate threshold met; all discrepancies resolved
5	Interface Dev & Testing	All HL7 interfaces built and run in parallel with legacy (standard HL7 + non-standard flat-file + custom protocols); VTrckS integration; CDC IZ Gateway; FHIR endpoints; WV-specific pharmacy, education, and emergency response connections. Each interface tested end-to-end before any partner cutover.	Weeks 10–18	Per-interface test results approved by OEPS; all §64-7-6 reporting interfaces validated
6	User Acceptance Testing	Agency-led UAT: all functional workflows, data accuracy verification, interface performance, RBAC validation across all 7 role types, reporting accuracy, CDS forecasting validation against ICE test cases	Weeks 16–20	All Critical and High defects resolved; written OEPS UAT sign-off
7	Training & Knowledge Transfer	Role-based training: OEPS/Agency Admins (system config, user management, data quality, reporting); Provider Staff (patient search, immunization entry, CDS, troubleshooting); School Nurses (roster, exemptions, school-based workflows). On-demand library, digital manuals, and in-application guidance.	Weeks 18–22	Training completion tracked per user; OEPS confirms readiness; no access activation without training completion (configurable)
8	Go-Live Preparation	Final data migration load to production; parallel interface operation confirmed;	Weeks 20–24	Written OEPS go-live authorization;

#	Phase	Key Activities	Duration	Acceptance Gate
		cutover plan approved by OEPS; rollback procedures documented and tested; Legacy Decommission Plan delivered as formal deliverable		Legacy Decommission Plan approved
9	Go-Live & Stabilization	Production launch; enhanced SRE support (daily issue reviews); parallel legacy access maintained; stabilization KPIs tracked; issues prioritized and resolved rapidly	Weeks 24–28	OEPS formal written Notice of Acceptance; stabilization criteria met without material errors
10	Legacy Decommission	Structured decommission of legacy IIS per approved plan: final data reconciliation, trading partner cutover confirmation, legacy read-only period, data archival in Agency-controlled format, vendor sunset	Post-Acceptance	Written OEPS decommission authorization

4.2.2.2 Environment Setup

Three fully isolated environments are provisioned on AWS under ArgoCD/Terraform automated control: **Development** (internal builds and unit testing), **Test/UAT** (OEPS validation), and **Production** (live operations). Promotion is controlled: Dev→Test→Production requires passing test gates at each stage. No testing or development activity can impact production. Elastic auto-scaling is configured to support WV's documented six-month transaction benchmarks (200+ concurrent users, 8M+ QDPs, 1M+ VXUs). OMIS/WVOT security controls are applied at provisioning.

4.2.2.2.3 System Configuration and Workflow Customization

WV-specific configuration is implemented through parameter-driven system settings, not custom code. OEPS can modify most configuration parameters independently after go-live without submitting change requests to VAULT. Configuration scope includes:

8. §64-7-6 mandatory reporting enforcement rules: all administrations required to report; configurable by provider type
9. RBAC role definitions for all 7 WV account types (Facility Client, Facility View, Organization Client, Organization View, Registry Client, Registry View, School Nurse, Vendor View)
10. HL7 validation thresholds and hold queue severity classifications
 - Vaccine exemption types (permanent, temporary, provisional), reasons (medical, religious, philosophical), and jurisdiction-specific review workflows
11. Coverage reporting population definitions (numerator/denominator logic) with OEPS-controlled parameters
 - School nurse workflows: roster linkage by school/grade/classroom/district; compliance monitoring parameters
12. Reminder/recall campaign parameters: vaccine type, age group, geography, provider, coverage status filters
 -

4.2.2.2.4 Data Migration Strategy

VAULT migrates all system components, not only core data, through a phased, iterative approach with data quality sprints. Each sprint validates a defined subset of records against legacy benchmarks before proceeding.

Migration Component	VAULT Approach	WV Scale
Patient records (4.2.2.2.4.1)	ETL with deterministic deduplication applied to migrated records; reconciliation against legacy patient count; source-target field mapping documentation delivered to OEPS before migration begins; error rate <0.1% required before production load	~3,000,000 records
Vaccination records (4.2.2.2.4.1)	Field-by-field mapping from legacy schema to OptimIIS schema; historical records preserved with administration date, lot number, provider, and site; CVX/MVX validation against current CDC code sets applied during migration	~32,000,000 records
Users and roles (4.2.2.2.4.2)	All accounts migrated with role mapping to new RBAC structure; inactive accounts reviewed with OEPS before migration; training completion status reset to enforce training gate	24,000 accounts, 7 role types
Providers and facilities (4.2.2.2.4.3)	All active providers migrated with organizational hierarchy, VFC enrollment status, HL7 interface configuration, and associated facilities; inactive providers archived per OEPS direction	445 public + 1,200 private VFC providers
Program enrollment (4.2.2.2.4.4)	VFC program participation data; school enrollment associations; organizational affiliations; exemption records with expiration and review dates preserved	All active program enrollments + historical records
Interfaces (4.2.2.2.4.5)	Each interface migrated individually in parallel; end-to-end testing before any partner cutover; WV's non-standard flat-file and custom protocol interfaces given dedicated test sprints	All standard + non-standard WV interfaces, with no gap in §64-7-6 reporting

Risk Management and Transition Mitigation

Transition Risk	Potential Impact	VAULT Mitigation Strategy
Data Migration Errors	Inaccurate or incomplete immunization records	Automated conversion tools, multiple validation cycles, record-level reconciliation, and parallel testing prior to production migration
Interface Conversion & Interoperability	Disruption of provider reporting or data exchange	IISConnex interoperability platform supports HL7 v2.5.1, FHIR, flat-file, and custom interfaces, reducing interface redevelopment risk
Provider Adoption & Training	Reduced utilization or workflow disruption	Role-based training, train-the-trainer approach, online learning resources, office hours, and ongoing support
Reporting & Compliance Interruptions	Delayed public health reporting and operational impacts	Parallel operations, validation testing, CDC compliance reviews, and reporting certification prior to go-live
Go-Live Stability	Service disruption during transition	Phased implementation, performance testing, load testing, and production readiness reviews
User Acceptance	Resistance to system change	Early stakeholder engagement, configuration workshops, pilot testing, and user feedback incorporation
Business Continuity	Service interruption due to unforeseen events	Redundant cloud architecture, disaster recovery procedures, backup environments, and documented continuity plans
Schedule Delays	Extended implementation timeline	Dedicated project management, milestone-based governance, weekly status reporting, and executive escalation procedures
Future Regulatory Changes	Additional development effort after implementation	Configurable platform architecture supporting evolving CDC, AIRA, ACIP, and West Virginia requirements
Workforce Capacity During Emergencies	Inability to scale immunization operations during outbreaks or public health emergencies	Integrated workforce management, self-scheduling, credential verification, training management, and rapid mobilization capabilities

4.2.2.2.5 Change Request Management

All scope changes after project plan approval follow a formal change control process: OEPS submits written request → VAULT provides impact assessment and timeline estimate within 5 business days → OEPS approves or rejects in writing → approved changes enter sprint planning. Emergency changes (P1-class) have an expedited path: immediate triage, OEPS notification, same-day assessment. All changes logged in Jira with full audit trail. No change is deployed without written OEPS approval.

4.2.2.2.6 Roles and Responsibilities

Activity	VAULT	OEPS / Agency
Project governance	Project Manager, daily delivery execution, schedule management, risk tracking	Designated Project Manager, milestone approvals, escalation decisions
System configuration	Technical configuration per OEPS-approved spec; configuration guide delivered before UAT	Configuration review and approval; UAT sign-off
Data migration	ETL development, migration execution, reconciliation reports with source-target comparison	Legacy data export access; reconciliation verification and approval
Interface development	Development, parallel testing, end-to-end validation	Partner coordination; test data provision; per-interface sign-off
Training	Role-based training delivery, materials, on-demand library, annual refreshers	Training scheduling, staff attendance, completion tracking
Stabilization support	Enhanced SRE monitoring; daily issue review calls; rapid P1 response	Issue reporting; operational acceptance determination
Legacy decommission	Decommission plan; data archival in Agency format; written destruction confirmation	Decommission authorization; archive validation

4.2.2.2.7 Risk Mitigation and Contingency Planning

Risk	Likelihood	VAULT Mitigation	Contingency
Legacy data quality issues discovered mid-migration	Medium	Data quality sprint approach identifies issues in test environment before production; threshold-based go/no-go criteria per sprint	Pause migration; additional cleanup sprint with OEPS; Agency notified within 24 hours
Non-standard WV interface protocol complexity	Medium	Interface inventory completed in Phase 1; IISConnex transformation layer pre-tested against WV's documented non-standard protocols	Extended interface sprint; parallel operation maintained; legacy interface stays active until new interface accepted
Legacy vendor non-cooperation on data export	Low-Medium	Data extraction plan established in Phase 1; VAULT certified data engineering team addresses extraction challenges independently	VAULT to provide data extraction tooling if legacy vendor's export is insufficient
OEPS resource constraints during UAT	Medium	Phased UAT approach; VAULT provides scripted test scenarios and hands-on embedded support; UAT schedule designed around OEPS capacity	Extended UAT window; go-live date adjusted; legacy

Risk	Likelihood	VAULT Mitigation	Contingency
ACIP schedule change during migration	Low	ICE engine deployed centrally; VAULT monitors MMWR and VFC Resolutions; changes deployed through sprint cycle with advance OEPS notice	system continues uninterrupted Emergency release available for P1-class schedule changes affecting active vaccination programs

4.2.2.2.8 Training, Support, and Knowledge Transfer

VAULT delivers role-based training that prepares each user type for their specific workflows, not generic system overview sessions. Training is a precondition for access activation (configurable), not an afterthought.

User Role	Training Content	Delivery Method
OEPS/Agency Administrators	System configuration; user and role management (bulk operations); data quality monitoring dashboards; HL7 error hold queue management; coverage reporting setup; audit log review; exemption workflow administration	Live hands-on workshop (recorded); administrator manual; monthly OEPS-only office hours for first 90 days post-go-live
Provider Office Staff / End Users	Patient search and registration; immunization entry; CDS forecasting usage; inventory management; HL7 submission troubleshooting; basic reporting	On-demand video library per workflow; quick reference cards; in-application contextual help; provider portal with self-service training tracking
School Nurses / Public Health Partners	Roster management; exemption tracking and reporting; school-based compliance reports; oral health module (if applicable); bulk student updates	Role-specific live session (recorded); school nurse quick-start guide; practice environment with WV-representative test data
Annual refreshers	System enhancements from prior year; updated workflows; new reporting capabilities; regulatory changes	On-demand video updates per release; optional live sessions for major enhancements

4.2.2.3 Vaccine Exemption Functionality

Granular Exemption Tracking Framework

VAULT supports granular exemption tracking by vaccine, disease, and immunization series, along with flexible classification of exemption types and reasons. Exemption data is fully integrated with patient demographics, school roster functionality, and immunization records, enabling comprehensive analysis across schools, grades, districts, and population groups.

The platform provides robust reporting and longitudinal tracking capabilities, allowing the State to monitor exemption trends, compliance status, and immunization coverage over time. Configurable workflows and role-based review processes enable OEPS to independently manage exemption submission, review, and approval without requiring custom development or vendor intervention, ensuring alignment with evolving WV policies and school-entry requirements. West Virginia requires robust exemption tracking and reporting capabilities aligned with school-entry compliance under WV Education Code and public health monitoring obligations. OptimIIS supports fully configurable exemption management that OEPS administers without vendor involvement.

RFP Requirement	VAULT Implementation
4.2.2.3.1 Record exemptions by vaccine or disease category	Exemptions recorded at vaccine-group level (e.g., DTaP, MMR, Varicella) with linkage to specific disease categories. OEPS configures the vaccine-disease mapping. All exemption records are linked to patient longitudinal records.
4.2.2.3.2 Support permanent, temporary (with expiration), and provisional (with review date) exemption types	All three types are supported in production. Expiration dates tracked with automated alerts to OEPS-designated staff before expiration. Provisional exemptions generate review date reminders. OEPS configures alert timing thresholds.
4.2.2.3.3 Support medical, religious, and philosophical exemption reasons	All three reason categories are supported. OEPS can add jurisdiction-specific sub-categories (e.g., specific medical contraindication codes) without vendor involvement. The reason categories are auditable and reportable.
4.2.2.3.4 Link exemption records to patient demographics	Every exemption record linked to the patient's demographic record including age, race/ethnicity, geographic location (county, district, school), and program enrollment status. Filterable for equity analysis.
4.2.2.3.5 Reporting by school, grade, district, exemption type, and compliance status	Pre-built exemption compliance reports filterable by school, grade level, school district, exemption type (permanent/temporary/provisional), and exemption reason. Reports exportable to school districts and health departments. Configurable reporting thresholds for compliance monitoring.
4.2.2.3.6 Integration with school roster for longitudinal tracking	Exemption records linked to school roster associations. Student-to-school-to-grade linkage-maintained year-over-year as students advance. Historical exemption records are preserved for longitudinal analysis. Compatible with 4.2.2.7 Oral Health Module school roster.
	Platform-Based Approach: Beyond Oral Health Critically, VAULT's oral health capabilities are not delivered through a single-purpose module. The same workflows, data model, and reporting capabilities that support oral health services can be extended to screenings, preventive services, and other treatment programs, eliminating the need for separate systems and enabling the State to support a wide range of school-based and community health services within a single, unified platform. This extensibility directly addresses West Virginia's need for a platform that can evolve beyond immunization tracking. Students, schools, and

RFP Requirement	VAULT Implementation
	population cohorts defined for oral health can be reused for vision screenings, hearing tests, or other public health programs without additional configuration or vendor engagement. West Virginia gains a foundation for comprehensive school health operations, not just an oral health add-on.
4.2.2.3.7 Configurable jurisdiction-specific workflows and review processes	OEPS administrators configure review, approval, and rejection workflows for each exemption type independently. Configurable options include required documentation fields, reviewer assignment rules, approval routing, auto-expiration actions, and notification recipients. No vendor involvement required for workflow changes after initial configuration.

VAULT's approach: VAULT's exemption functionality is integrated into the core IIS patient record, not a separate module. OEPS controls all workflow configuration parameters independently with no change order required to modify review workflows.

4.2.2.4 Coverage Reporting and Population Definition

Coverage Reporting Operational Workflow

1. OEPS or authorized users define population criteria (e.g., age cohort, geography, provider, program participation)
2. The system applies standardized numerator and denominator logic aligned with CDC methodologies
3. Users generate reports filtered by jurisdiction (state, county, district, school, or custom regions)
4. The system calculates coverage metrics in real time
5. Results are displayed through dashboards or exported for further analysis and reporting

For West Virginia, this enables OEPS staff, county health departments, and school-based programs to evaluate coverage at multiple levels, identify under-vaccinated populations, and support targeted intervention strategies across rural and underserved areas.

OEPS seeks accurate, flexible, and jurisdictionally relevant coverage rate reporting. VAULT gives OEPS **direct, independent control** over population definition, geographic filtering, and coverage of metric configuration. OEPS staff define numerator and denominator parameters, save report templates, and schedule recurring reports without submitting requests to VAULT. This is qualitatively different from traditional IIS reporting models where the vendor controls report definitions.

RFP Requirement	VAULT Implementation
4.2.2.4.1 Define and document demographic population for rate calculations (numerator/denominator)	OEPS configures numerator criteria (vaccination status meeting defined thresholds) and denominator criteria (eligible population by age cohort, enrollment status, geographic boundary, program participation) independently. All parameters saved with version history. Multiple

RFP Requirement	VAULT Implementation
	population definitions can be maintained simultaneously for different reporting programs (NIS-Child, AFIX, school compliance, etc.).
4.2.2.4.2 Jurisdictional filtering by state, county, or other geographic boundaries	Multi-level geographic filters: state, county, health district, school district, custom-defined geographic regions. County-level coverage maps available for OEPS dashboards. Geographic boundaries configurable by OEPS to match WV's health district structure. Shareable in read-only format with LHDs without granting access.
4.2.2.4.3.1 Complete vaccine series reports	Series completion logic applied via ICE CDSi integration to defined population cohort. Outputs match NIS-Child, AFIX, and WV-specific definitions. OEPS configures which vaccines and dose combinations constitute completion for each reporting program. Results include breakdown by geographic, demographic, and organizational dimensions.
4.2.2.4.3.2 Initiation of series (1 or more doses)	Separate dose-initiated metric configurable per vaccine group. Supports CDC coverage of benchmarks and WV-specific measures. Initiation and completion rates were reported side-by-side to show drop-off analysis. Filterable by age group, geography, provider, and enrollment status.
4.2.2.4.3.3 Final dose needed to complete series	Gap analysis output: patients who have initiated but not completed a series, with specific next-dose recommendation generated by ICE. Used to drive reminder/recall targeting. OEPS can launch a recall campaign directly from a coverage gap report without a separate extract.
4.2.2.4.4 Configuration options for customizing report parameters aligned with CDC and state-defined coverage metrics	Custom report builder with configurable: vaccine groupings, series definitions, age cohorts, timeframes, geographic filters, and provider/organization dimensions. Alignment with CDC NIS methodology, AFIX, and WV-specific school compliance measures. Reports scheduled for recurring automated execution (daily/weekly/monthly). Saved templates reusable across reporting cycles without reconfiguration.

Maryland reference: VAULT enabled Maryland DOH to analyze vaccination rates across diverse populations and geographic regions, identify coverage gaps supporting school compliance monitoring, configure and save reusable report templates, and generate recurring reports aligned with state reporting deadlines, all without vendor involvement all without vendor involvement in report generation.

4.2.2.5 Support Scalable Data Exchange and Reporting via Read Replica Integration

VAULT offers Read Replica / Data Bridge Integration as priced in Attachment A, lines D4–D5. All analytical and reporting workloads, including Data Bridge queries, BI tool connections, and bulk data extracts, which execute against the read-only replica, preserving production system performance for real-time clinical and operational workflows.

Why this architecture is superior to alternatives: VAULT's architecture isolates production and analytical workloads by design. No separate service contract or staff management is required.

RFP Requirement (4.2.2.5)	VAULT Implementation	Performance / SLA Commitment
4.2.2.5.1 Read-only replica or equivalent mechanism	Dedicated logically separate database instance on AWS Aurora; enforced read-only with zero write permissions; complete isolation from production transactional workloads; production IIS operations unaffected by any analytical activity on the replica	Production performance guarantee: no analytical query, regardless of complexity or volume, can affect production IIS response time
4.2.2.5.2 Update frequency of the replica	Continuous log-based/streaming replication from production Aurora to replica; near real-time synchronization; configurable to scheduled intervals (hourly, daily) if required by Data Bridge architecture	Replication lag target: ≤5 minutes under standard load; OEPS notified if lag exceeds threshold
4.2.2.5.3 Management of read-only access to protect production performance	All Data Bridge queries, BI connections, and reporting extracts routed exclusively to replica; production reserved for transactional workflows; query optimization and indexing on replica configured independently of production indexes	WV's 24,000 concurrent IIS users experience no performance degradation during active Data Bridge operations
4.2.2.5.4 Configuration, deployment, and maintenance of replication	VAULT manages full replication lifecycle: pipeline configuration, deployment, schema synchronization, monitoring, and maintenance. OEPS is not responsible for replication infrastructure. Schema changes in production automatically propagated to replica with OEPS notification before implementation.	OEPS manages data use; VAULT manages replication infrastructure. This is a clean separation of responsibility
4.2.2.5.5 Monitoring, troubleshooting, and data consistency	Continuous automated monitoring of replication lag, sync status, and data consistency; automated alerts to VAULT SRE and OEPS if anomalies detected; discrepancy detection and remediation procedures documented in runbook; monthly replication health reports to OEPS	Any sync issue detected and OEPS notified within SLA window; data consistency guaranteed before scheduled reporting runs
4.2.2.5.6 Documentation of replication architecture and access protocols	Architecture diagrams, data flow documentation, access protocols, schema documentation, authentication requirements, and integration guidance for Data Bridge developers delivered as formal deliverables prior to go-live.	WV Data Bridge team can develop and maintain integrations independently

RFP Requirement (4.2.2.5)	VAULT Implementation	Performance / SLA Commitment
	Documentation version-controlled and updated with schema changes.	
4.2.2.5.7 Secure and efficient querying by authorized users	RBAC enforced on all replica access; OAuth2 authentication for API connections; SQL, API, and BI tool access methods supported; least-privilege access for all Data Bridge service accounts; no VAULT mediation required for individual query execution	OEPS-defined service accounts access replica directly; query results available to Data Bridge within defined latency targets
Cost Declaration: Read Replica / Data Bridge Integration: The Read Replica / Data Bridge integration described in this section is a priced, optional feature. Costs are provided in Attachment A: a one-time implementation and deployment fee (Line B2) and an annual recurring fee for operational hosting, database licensing, management, and maintenance of the secure read-only replica mechanism (Lines D4–D5). Lines B2, D4, and D5 of Attachment A are marked accordingly. 4.2.2.5.8 Quantification of data exchange	Monthly reporting to OEPS: replica access volumes, query frequency, interface traffic (inbound/outbound by trading partner), replication metrics, and capacity utilization. Real-time monitoring dashboard available to OEPS administrators.	OEPS has full visibility into Data Bridge usage patterns for capacity planning and budget justification

4.2.2.6 Database Schema and Data Dictionary

Field-Level Metadata and Data Dictionary

VAULT maintains a comprehensive data dictionary including detailed metadata for each data element:

- Field names and plain-language descriptions
- Data types and formats (string, date, numeric, coded)
- Required versus optional field designation
- Allowable values and standardized code sets (CVX, MVX, NDC, HL7 table values)
- Validation rules, constraints, and business logic
- Default values where applicable

All field definitions align with CDC IIS Functional Standards, HL7 v2.5.1 message structures, and standardized code sets, ensuring consistency between internal data storage and external data exchange requirements.

Key Tables and Data Domain Definitions

VAULT provides detailed documentation of all major tables and data domains, including:

- Patient Records: demographic information, identifiers, and cross-system linkages
- Vaccination Events: administration details, vaccine types, lot numbers, and provider attribution

- **Inventory Management:** vaccine stock levels, lot tracking, distribution, and reconciliation records
- **Exemptions:** medical and non-medical exemption records, status, review cycles, and expiration tracking
- **School Roster Modules:** student-to-school associations supporting compliance monitoring and population-based reporting

Cross-domain relationships are fully documented: patient-to-provider-to-vaccination event linkages, inventory-to-administration-to-reporting chains, and exemption-to-roster-to-compliance integrations.

Versioning and Update Protocols

VAULT maintains version-controlled schema documentation with full change history. All schema updates go through formal impact analysis covering effects on reporting, integrations, and downstream systems. Changes are deployed through controlled release cycles with advance stakeholder notification. Backward compatibility is prioritized to protect existing integrations, and the data dictionary is updated continuously alongside system enhancements.

VAULT provides comprehensive, transparent, and standards-aligned documentation of the OptimIIS data architecture, enabling West Virginia to fully understand, manage, and utilize its IIS data environment without ongoing vendor dependency.

Schema Documentation Requirement	VAULT Deliverable
4.2.2.6.1 Entity-Relationship Diagrams (ERDs) Core Data Entities Covered	Logical and physical ERDs covering all major data domains: patient and demographic records, vaccination events, provider/organization/facility entities, vaccine inventory, exemption records, school roster associations, user/role tables, and oral health module entities. Delivered in visual format accessible to both technical and program staff. Updated with each schema change.
4.2.2.6.2 Field-level definitions	Complete data dictionary: field name, plain-language description, data type and format, required/optional designation, allowable values (with CVX/MVX/NDC code set references), validation rules and business logic, default values, and cross-table linkages. Aligned with CDC IIS Functional Standards terminology.
4.2.2.6.3 Key table and data domain definitions	Full documentation of all major tables including patient records, vaccination events, inventory management, exemptions, school roster, and user/role tables, including inter-table relationships including inter-table relationships, primary/foreign key structure, and business rules governing data creation, modification, and archival.
4.2.2.6.4 CDC HL7 v2.5.1 mapping	Field-by-field mapping of OptimIIS internal schema to HL7 v2.5.1 segments (PID, RXA, ORC, OBX, NK1, MSH) for all supported message types (VXU, QBP/Z34, ACK). Managed centrally by IISConnex. Continuously updated to reflect CDC message specification changes.
4.2.2.6.5 Versioning and update protocols	Version-controlled schema documentation with full change history. Formal impact analysis for all schema changes before deployment. Backward compatibility requirements are enforced. OEPS notified 5+ business days before any schema change affecting integrations or reporting.

4.2.2.7 Oral Health Module

VAULT provides the Oral Health Module as a configurable extension of the core OptimIIS platform. It is already deployed and ready for WV-specific configurations. The module is fully integrated, not a separate system with a separate data model, separate user base, or separate reporting pipeline. All oral health records share the same patient data model as immunization records, enabling a truly unified longitudinal student health record.

Why VAULT's platform-based approach is superior: VAULT's oral health capability is purpose-built for OEPS's goal of advancing health equity in underserved student populations through school-based dental screening, built from the ground up rather than adapted from an immunization compliance tool. The features and functionality have been informed by active dental health providers who have advised the needs of office-based and community-based providers.

RFP Requirement (4.2.2.5)	VAULT Implementation	Outcome for West Virginia
4.2.2.7.1 Roster Integration	Students linked to schools, grades, classrooms, and teachers within the core IIS patient data model. Supports population-based targeting by school/grade/county/district. Gap identification for students without oral health records. School roster integrates with 4.2.2.3 exemption tracking and 4.2.2.4 coverage reporting. Extensible to immunization and	Enables targeted outreach to close oral health coverage gaps in underserved school populations, directly supporting the State's health equity goal, without a separate data system.
4.2.2.7.2.1 Dental professional workflow (direct entry)	Point-of-care documentation during school-based clinics, community outreach events, and clinical encounters. Structured fields for screening findings, assessment categories, and treatment outcomes. Batch/group workflows for large-scale screening events (entire grade in one session). Mobile-	Care is documented at the point of service, including in mobile and field settings, so no encounter is lost to paper backlogs or delayed data entry.
4.2.2.7.2.2 School nurse workflow (historical data and roster management)	Retrospective data entry for externally provided records (e.g., community dental clinics). Roster management and maintenance including year-over-year student progression. Follow-up care coordination and service status tracking. Shared visibility with dental professionals. Both users see the same as both users see	Continuity of care is preserved across school years and providers, with both dental professionals and school nurses working from the same longitudinal student record.

4.2.2.7.3.1 Identify students with/without oral health records

Report: students with at least one documented oral health encounter vs. students with no oral health record in the IIS. Filterable by school, grade, classroom, county, district, and demographic group. Exportable for use by school administrators, health departments, and outreach coordinators.

OEPS and school districts can prioritize outreach to students with no documented oral health access, the core equity objective this module is intended to serve.

4.2.2.7.3.2 Filter by urgency of care, school, grade, county

Multi-dimensional filtering: urgency classification (based on screening findings), school, grade level, county, district, and demographic attributes. Supports prioritized outreach to high-need populations. Identifies geographic concentrations of unmet oral health needs.

Limited outreach resources are targeted at the highest-need schools and populations first, rather than distributed evenly regardless of need.

4.2.2.7.4.1 Dental professionals as providers in dropdown

Dental professionals configured as providers within the OptimIIS RBAC framework. Available in the provider dropdown across all relevant workflows. Access controlled by OEPS-defined role permissions without vendor involvement.

No separate credentialing system is required; dental providers operate inside the same RBAC framework OEPS already manages for immunization providers.

4.2.2.7.4.2 School nurses access oral health reports and services

School Nurse role granted access to oral health reports and health service documentation functionality through RBAC configuration. Access level configurable by OEPS administrators.

School nurses support oral health follow-up immediately upon role assignment, without waiting on a vendor-granted permission change.

4.2.2.8 Next-Generation Interoperability and FHIR Standards

VAULT's FHIR-R4 implementation is production-ready today, not a roadmap item. OEPS can connect modern EHR partners and BI tools via FHIR-R4 APIs from day one. This is a meaningful distinction: WebIZ is built on Microsoft .NET and SQL Server and describes FHIR capabilities, but as the largest contributor to CDC IZGateway its primary interoperability strength is HL7 v2.5.1 at scale. VAULT offers both, with FHIR-R4 in production and HL7 v2.5.1 handled by IISConnex across 30+ state systems.

FHIR / Interoperability Requirement	VAULT Status	Outcome for West Virginia
4.2.2.8.1 FHIR-R4 production support	Immunization, Immunization Recommendation, Patient, Practitioner, Organization, and Location of FHIR-R4 resources in production. RESTful API with SMART on FHIR (OAuth2) authorization. Versioned developer portal with sandbox environment.	WV can connect modern EHR and HIE partners via FHIR-R4 on day one of the contract — not after a future development phase.
4.2.2.8.2 Required FHIR resources	All required immunization FHIR resources (Immunization, Immunization Recommendation, Patient) plus Practitioner, Organization, and Location resources needed for WV's provider management workflows	WV's provider management and immunization forecasting workflows run on FHIR resources already proven in production elsewhere, not resources built new for this contract.
4.2.2.8.3 Roadmap and TECCA alignment	Active alignment with US Core and USCDI v3. TECCA/QHINs: VAULT is targeting QHIN technical on-ramp evaluation by end of 2026, consistent with CDC's published TECCA immunization implementation timeline. FHIR IGs for immunization incorporated into OptimIIS releases within 60 days of CDC finalization. Architecture supports incremental FHIR scope of expansion without platform downtime. WV will be on the same FHIR-R4 production codebase used by all other VAULT jurisdictions,	WV is positioned to join the national health data network (TECCA) without a separate integration project once VAULT completes QHIN onboarding.

FHIR / Interoperability Requirement	VAULT Status	vs. Alternatives
	meaning WV benefits every FHIR enhancement deployed across the network.	
4.2.2.8.4 API documentation	Publicly accessible developer portal: endpoint specifications, resource definitions, authentication requirements, sample requests/responses, error handling frameworks, versioning strategy, backward compatibility documentation. Sandbox environment for integration testing. Technical onboarding support included.	WV's own IT staff and any third-party integrators can build against FHIR endpoints independently, without ongoing vendor mediation for each new connection.

Section 4.2.2 Summary: West Virginia-Specific Goals VAULT addresses all eight WV-specific goals with jurisdiction-specific implementation detail, full RFP sub-requirement coverage, and direct comparison to available competitive alternatives. OptimIIS's operating system integrated architecture: IIS registry, IISConnex interoperability, clinic operations, community outreach and organization, and third-party billing, which provides capabilities that no single-application IIS competitor currently matches. VAULT's approach is superior in implementation risk management (parallel operations vs. cutover), interoperability scope (standard + non-standard protocols vs. HL7-only), operational reach (clinic operations and billing vs. registry-only), and total cost of ownership (training, Read Replica, and data quality tools included vs. separately billed).

VAULT Technologies confirms full compliance with all mandatory project requirements defined in this Solicitation. Where VAULT's approach exceeds the mandatory threshold, that is stated.

Mandatory Requirements: Deliverables and Timeline Summary

The table below consolidates all contractual deliverables from 4.2.3 with their required timelines. This serves as the master compliance tracking reference.

Ref	Deliverable	Timeline / Trigger	Format	Owner
4.2.3.1	Completed Attachment B RTM (printed, bound physical copies, all 10 sections)	With technical proposal submission (June 4, 2026)	Physical bound copy + electronic	VAULT
4.2.3.3	Monthly SLA compliance reports (uptime, support metrics, corrective actions)	By 5th of each month following the month reported	Written report to OEPS	VAULT

Ref	Deliverable	Timeline / Trigger	Format	Owner
4.2.3.5.1.1	BCP/DR plan documentation	Within 60 days of contract execution; updated within 60 days of material change	Document	VAULT
4.2.3.5.1.3	BCP/DR annual test results report	Within 30 days of annual test completion	Written report	VAULT
4.2.3.5.1.6	Annual BCP/DR certification	Annually throughout contract term	Written certification	VAULT
4.2.3.6.5	Data return on termination (full dataset + schema + data dictionary)	Within 30 working days of notice of termination	Agency-specified format	VAULT
4.2.3.6.6	Secure data destruction certification	Within 30 working days of Agency written authorization	Written certification per NIST SP 800-88	VAULT
4.2.3.7.1	Finalized Project Plan and Implementation Schedule	For Agency approval at project initiation (within 30 days of contract execution); updated per change control	Document	VAULT
4.2.3.9	Project Manager bio with qualifications	With proposal submission	Section of technical proposal	VAULT
4.2.3.10	Role-specific training plan	Prior to go-live; updated with each major release	Document + course catalog	VAULT
4.2.3.12.1.1	FedRAMP documentation (AWS authorization letter or FedRAMP Marketplace listing)	Within 30 days of contract execution	Documentation package	VAULT
4.2.3.12.2.1	SOC 2 Type II initial audit report	Within 60 days of contract execution	Audit report	VAULT
4.2.3.12.2.2	SOC 2 Type II annual updated audit report	Within 30 days of contract anniversary date, annually	Audit report	VAULT
4.2.3.12.3	Penetration testing report + remediation plan	Within 30 days of annual test completion	Report + plan	VAULT
4.2.3.12.6	Vendor Attestation Form	Within 30 days of contract execution; updated upon request	Completed form	VAULT
4.2.3.12.7	IR policy and plan available to Agency	Upon request; certified annually	Document	VAULT
4.2.3.12.7.4	IR exercise summary reports	Within 30 days of annual exercise completion	Written report	VAULT

Ref	Deliverable	Timeline / Trigger	Format	Owner
4.2.3.12.8	Security audit evidence / compliance documentation	Within 30 days of Agency request, at no cost	Documentation package	VAULT
4.2.3.13.3.4	System documentation package (architecture, config guides, user manuals, training materials, admin procedures)	Delivered and approved before formal Acceptance	Document set	VAULT

4.2.3.1 IIS Baseline Requirements RTM

VAULT COMPLIES. VAULT has completed all required fields in Attachment B (IIS Baseline Requirements RTM (Addendum 1 revised version released with CRFP 0506 MIS2700000001)). Responses cover all ten sections, and all columns designated for Vendor Response, including both required and optional functionality. VAULT confirms that requirements added or modified by Addendum 1 have been identified, reviewed, and addressed in VAULT's vendor response columns.

Requirement	VAULT Commitment and Approach
All 10 RTM sections completed	VAULT confirms completion of 4.2.3.1.1 (Administer System), 4.2.3.1.2 (Manage Organizations & Facilities), 4.2.3.1.3 (Manage Users), 4.2.3.1.4 (Support Interoperability), 4.2.3.1.5 (Ensure Data Quality), 4.2.3.1.6 (Evaluate & Forecast), 4.2.3.1.7 (Manage Patient & Immunization Record), 4.2.3.1.8 (Manage Vaccine Inventory), 4.2.3.1.9 (Provide Data Access), 4.2.3.1.10 (Non-functional Requirements).
Vendor Response column completed for all rows	Each requirement addressed with specific OptimIIS/IISConnex capability; optional functionality responses explicitly noted; evaluators can verify compliance by cross-referencing RTM row to this technical proposal.
Physical bound copies	Printed, bound physical copies will be submitted with the technical proposal. Formatted for legibility and organized to allow evaluators to readily verify compliance with each requirement.

4.2.3.2 System Compatibility Requirements

Requirement	VAULT Commitment and Approach
4.2.3.2.1 Cloud-based, vendor-hosted	VAULT COMPLIES. OptimIIS is hosted exclusively on AWS within U.S.-based data centers. VAULT manages all infrastructure provisioning, monitoring, maintenance, patching, and updates. No State IT involvement is required for hosting operations.
4.2.3.2.2 Major browser compatibility	VAULT COMPLIES. Fully tested and validated versions of Google Chrome, Mozilla Firefox, Microsoft Edge, and Safari. Browser compatibility verified as part of each standard release cycle.

Requirement	VAULT Commitment and Approach
4.2.3.2.3 Standard desktop and laptop operation	VAULT COMPLIES. Browser-based interface; no specialized hardware required; operates on standard Windows and Mac configurations with minimal resource requirements.
4.2.3.2.4 No elevated permissions or local installation	VAULT COMPLIES. Zero local software installation. Users access all functionality through a standard browser. No administrator-level device permissions are required at any time.

4.2.3.3 Service Level Agreement (SLA)

VAULT COMPLIES. VAULT commits to 99.9% monthly production uptime, exceeding the RFP's stated 24/7/365 minimum availability requirement. The distinction matters for West Virginia's mandatory reporting environment: VAULT's commitment is measured monthly, not annually, meaning poor-performing months cannot be averaged by strong ones.

SLA Element	VAULT Commitment	Measurement / Enforcement
Monthly uptime	99.9% production IIS availability	Datadog SLO dashboards with real-time error-budget tracking; automated SRE alert when budget at risk

SLA Element	VAULT Commitment	Measurement / Enforcement
Measurement period	Per calendar month	Monthly, not annual, which protects against seasonal averaging
Scheduled maintenance	Outside standard business hours; pre-approved by OEPS in writing; minimum 5 business days advance notice	OEPS approval required before any production change window is scheduled
P1 incident response	SRE on-call; 15-minute alert-to-triage commitment; OEPS notified simultaneously	Automated paging via on-call rotation; parallel OEPS notification
P1 resolution target	Documented runbooks per failure mode; blameless post-mortem within 5 business days of resolution	Runbooks maintained and tested through quarterly DR exercises
Non-P1 acknowledgment	1 hour for confirmation of receipt via ticketing system	
SLA reporting	Monthly report delivered to OEPS by 5th of each month	Includes: uptime percentage, error budget consumed, P1 incident log, resolution times, corrective actions
Performance monitoring	Continuous Datadog APM monitoring of latency, error rates, saturation, and traffic; monthly capacity reviews	OEPS has read-only access to operational dashboard on request

How VAULT exceeds the requirement: The RFP requires 24/7/365 availability and monthly SLA reporting.

VAULT provides both and additionally commits to error-budget monitoring that surfaces degradation trends before thresholds are breached; a runbook-driven P1 resolution process with documented resolution timelines; and monthly SLA reports delivered by the 5th of each month.

4.2.3.4 Maintenance and Support

Requirement	VAULT Commitment and Approach
4.2.3.4.1 Help desk and escalation	VAULT COMPLIES. Multi-tier support: Tier 1 (general users via portal and phone), Tier 2 (technical/functional via escalation), Tier 3 (engineering). Standard hours: M–F 8:00 AM–5:00 PM ET with documented intake, triage, and escalation procedures. Extended coverage including evenings and weekends for P1 and high-demand periods. OEPS has a dedicated account management contact for program-level escalation.
4.2.3.4.2 Bug fixes and security patching	VAULT COMPLIES. Critical security patches deployed within 30 days of identification (or per Agency approval timeline). Patch deployment through controlled change management: test → UAT → production. Emergency patches deployable outside standard release cycles for active P1 exploits. VAULT monitors CVE databases and vendor security advisories; patches tracked through vulnerability management program.

4.2.3.4.3 Performance monitoring VAULT COMPLIES AND EXCEEDS. Continuous Datadog APM monitoring of all production environments: application response time, database query performance, infrastructure utilization, interface throughput, and error rates. Forecast-based capacity reviews monthly. Proactive scaling triggered by threshold breach before user impact. OEPS receives monthly performance summaries.

4.2.3.4.4 Version upgrades VAULT COMPLIES AND EXCEEDS. Bi-weekly sprint cadence; upgrades deployed through ArgoCD/Terraform controlled pipelines with zero downtime. Backward compatibility required: no functionality removed without Agency written approval; OEPS notified 5+ business days before any production change. Platform architecture (microservices) allows component-level updates without system-wide upgrade events.

Requirement	VAULT Commitment and Approach
4.2.3.4.5 Documentation updates	VAULT COMPLIES. Documentation updated with every release; release notes published to version-controlled documentation portal. OEPS receives advance notification of documentation changes affecting workflows. OEPS staff have direct access to current documentation library; no vendor ticket required to access updated materials.

4.2.3.5 Data Storage and BCP/DR

VAULT COMPLIES. All IIS data, including production, backups, failover environments, DR operations, and replicas, is stored and processed exclusively within U.S.-based AWS data centers. No data is transmitted outside U.S. jurisdiction under any operational scenario, including disaster recovery events.

Ref	Mandatory Requirement	VAULT Compliance	Deliverable
4.2.3.5.1.1	BCP/DR plan documentation	Formal BCP and DR documentation including system recovery procedures, data restoration processes, operational continuity plans, roles and responsibilities, escalation procedures, and RTO ≤4 hours / RPO ≤1 hour.	Delivered within 60 days of contract execution; updated within 60 days of material change to hosting environment
4.2.3.5.1.2	NIST alignment	BCP/DR plans aligned with NIST SP 800-61 (Computer Security Incident Handling) and NIST SP 800-34 (Contingency Planning for Federal Information Systems). Maintained and updated throughout the contract term.	Documents available on request; updated per NIST publication cycle
4.2.3.5.1.3	Annual testing	Annual BCP/DR testing including tabletop exercises and live failover scenarios. Test results document: scenario, findings, corrective actions, and remediation timelines.	Test results report delivered to OEPS within 30 days of test completion
4.2.3.5.1.4	U.S. data residency	All backup, failover, and recovery environments operate within U.S.-based AWS availability zones. No data transferred outside U.S. jurisdiction under any scenario.	Attested in Vendor Attestation Form (4.2.3.12.6); verifiable through AWS documentation
4.2.3.5.1.5	Continuous improvement	BCP/DR plans updated within 60 days of: test findings; operational incidents; system changes; hosting environment changes; or new NIST/federal guidance.	Documented update cycle; OEPS notified of material plan changes
4.2.3.5.1.6	Annual certification	Annual written certification to Agency confirming BCP/DR plans are current, tested, and compliant.	Delivered annually throughout contract term

4.2.3.6 Data Ownership

VAULT COMPLIES. All data within the IIS, including data submitted by providers, generated through system use, and produced through reporting or analytics, is the sole property of the State of West Virginia. VAULT's role is limited to hosting, managing, and processing data in strict accordance with Agency direction and contractual obligations. VAULT asserts no ownership, commercial rights, or secondary use rights over any Agency data at any time.

Requirement	VAULT Commitment and Approach
4.2.3.6.1–6.2 Agency ownership	All data is the sole property of the Agency. VAULT collects and holds data exclusively on the Agency's behalf. This applies to all data including de-identified, aggregated, and limited datasets.
4.2.3.6.3 Privacy and security safeguards	RBAC, encryption at rest and in transit, immutable audit logging, and continuous monitoring ensure all data is protected from unauthorized access. Access restricted to authorized personnel under least privileged principles.
4.2.3.6.4 Data return and portability	Upon request or contract termination: full IIS dataset returned to Agency within 30 working days, at no additional cost, in Agency-specified format (HL7, CSV, XML, or other agreed structure). Data dictionaries, schema definitions, and interface specifications provided to ensure usability.
4.2.3.6.5 Transition support	Full cooperation with Agency and successor vendor: data delivery, documentation, knowledge transfer, and coordination within 30 working days of notice of termination. Reasonable transition support at no additional cost.
4.2.3.6.6 Secure data destruction	Upon written Agency authorization: all copies destroyed per NIST SP 800-88 (media sanitization) within 30 working days: production, backups, replicas production, backups, replicas, all storage environments. Written destruction certificate provided confirming permanent, unrecoverable destruction.
4.2.3.11.10 No secondary use	VAULT will not use IIS data for analytics, AI/ML training, model development, product improvement, or any secondary purpose without explicit prior written approval from the State. This restriction applies to all data forms including de-identified or aggregated datasets.

4.2.3.7 General Project Requirements

VAULT COMPLIES. All project activities are governed by a formally approved Project Plan; no scope changes are implemented without prior written Agency approval; all payments are contingent on verified milestone completion and formal written Agency acceptance; no recurring fees are assessed before final system acceptance.

Requirement	VAULT Commitment and Approach
4.2.3.7.1 Project Plan and Schedule	A comprehensive Project Plan covering detailed timelines, task dependencies, resource assignments, deliverables, communication protocols, and risk management. Submitted for Agency approval within 30 days of contract execution and maintained as the governing document throughout implementation. Cross-references Implementation Plan 4.2.2.2.
4.2.3.7.2 Change control	No deviations from the approved Implementation Plan without prior written Agency approval. All proposed changes: formally documented → impact assessment provided → Agency review and approval → implementation. Emergency changes (P1-class) have expedited path but still require Agency notification and approval of documentation.
4.2.3.7.3 Milestone-based payments	Milestones jointly defined with Agency at project initiation; each milestone documented with deliverable description, objective acceptance criteria, documentation requirements, and proposed payment amount. No payment invoiced until Agency has verified completion in writing. No partial or conditional payments. No recurring fees before final written Acceptance.
4.2.3.7.3.6 Milestone failure	If a milestone is not successfully completed: VAULT remediates all deficiencies at no additional cost → resubmits for Agency review → supports any required retesting. No additional charges for remediation. No delays to remaining schedule are attributed to remediation effort. Schedule impact is assessed and communicated transparently.
4.2.3.7.4 Liquidated damages	VAULT acknowledges the Agency's right to assess liquidated damages for implementation delays per this Solicitation. VAULT will adhere to all applicable provisions.

4.2.3.8 Vendor Staffing

VAULT COMPLIES. All personnel assigned to this contract will complete the required OMIS background checks before receiving system access. VAULT aligns all staffing and HR practices with WVOT policies, OMIS Policy #0529, and OMIS Procedure OP-35 and Appendix A.

Requirement	VAULT Commitment and Approach
4.2.3.8.1 WVOT policy compliance	VAULT aligns internal security policies, access controls, and operational procedures with all applicable WVOT policies. This includes account management, data protection, acceptable use, change management, and security monitoring requirements.
4.2.3.8.2 OMIS Policy #0529 background checks	All personnel with access to State systems or sensitive data: fingerprint-based state and federal background checks completed before system access is granted. Documentation maintained and available to Agency on request.

Requirement	VAULT Commitment and Approach
4.2.3.8.3 OMIS Procedure OP-35 / Appendix A	Fingerprint-based identity verification and state and federal (FBI) background investigations per OP-35 and Appendix A. Favorable adjudication required before any access is granted. VAULT coordinates all background check activities and maintains compliance documentation throughout the contract term.

4.2.3.9 Project Manager

VAULT COMPLIES. VAULT will assign a dedicated Project Manager with PMP certification and 20+ years of public health systems experience to lead all aspects of the WV IIS implementation.

PM Element	VAULT Response
Named Project Manager	Dr. Montressa Washington, PMP, serves as VAULT's dedicated Project Manager for this engagement. Dr. Washington holds an active Project Management Professional (PMP) certification.
Experience	20+ years of project management and public health systems experience. Prior experience leading complex, large-scale implementations at IBM and Accenture requiring cross-functional coordination, compliance adherence, and structured delivery.
Prior relevant implementations	Maryland Department of Health <i>OCM Lead / Implementation Manager January 2021 – Present</i> Labcorp / IISConnex <i>Functional Lead / Stakeholder Engagement January 2023 – Present</i>
Responsibilities on WV contract	Primary Agency contact; weekly status meetings and milestone reviews; project schedule management; risk identification and mitigation; quality, security, and compliance adherence; issue resolution and escalation coordination.
Replacement policy	VAULT will not replace the named PM without 30 days of advance written notice to OEPS and Agency for written concurrence. Any replacement will meet equivalent qualifications.

4.2.3.10 Comprehensive and Role-Specific Training Plan

VAULT COMPLIES. VAULT's training program ensures that every user role is prepared before go-live and continuously supported thereafter. Training completion is a configurable precondition for system access. No user can activate an account without completing assigned training modules.

4.2.3.10.1 Role-Specific Training Strategy

VAULT complies with this requirement.

VAULT provides role-specific training tailored to the distinct responsibilities and workflows of each user group. Training content, format, and depth are customized to ensure that each role gains the knowledge and skills required to effectively use the system in daily operations.

4.2.3.10.1.1 OEPS / Agency Administrators

Training focuses on system configuration, user and role management, data quality monitoring, advanced reporting, and overall system oversight. Administrators are also trained in audit functionality, interface monitoring, and governance processes to support statewide program management.

4.2.3.10.1.2 Provider Office Staff / End Users

Training emphasizes day-to-day workflows, including patient search and registration, immunization entry, clinical decision support usage, and basic troubleshooting. Instruction is practical and workflow-driven to enable users to become productive quickly in real-world scenarios.

4.2.3.10.1.3 School Nurses / Public Health Partners

Training focuses on roster management, exemption tracking, school-based workflows, and public health follow-up activities. Users are trained to manage defined populations, monitor compliance, and support outreach and reporting efforts.

All training incorporates real-world use cases, system demonstrations, and guided exercises to reinforce learning and support knowledge of retention.

4.2.3.10.2 Training Deliverables

VAULT complies with this requirement.

VAULT provides a comprehensive set of training materials and resources to support all user roles. All materials are maintained in digital formats to ensure accessibility, ease of distribution, and timely updates.

4.2.3.10.2.1 On-Demand Video Instructions or Demonstrations for Each User Role

On-demand video training modules tailored to each user role, including system walkthroughs, step-by-step demonstrations, and key workflow explanations.

4.2.3.10.2.2 Digital User Guides or Manuals

Digital user guides and manuals with detailed instructions, screenshots, and reference materials to support both functional and technical users. Quick reference guides and job aids designed to support common tasks and reinforce key workflows.

All training materials are regularly updated to reflect system enhancements, policy changes, and evolving user needs.

4.2.3.10.3 Post-Implementation Support and Refreshers

VAULT complies with this requirement.

VAULT provides structured post-implementation support to ensure a smooth transition following Go-Live and sustained user adoption.

4.2.3.10.3.1 Post-Implementation Support

VAULT provides a defined period of enhanced support following Go-Live, focused on resolving user adoption challenges and reinforcing training concepts. This support includes:

- Dedicated resources to assist users and respond to questions in real time
- Additional training sessions based on user needs and feedback
- Reinforcement of key workflows and best practices
- Close coordination with the Agency to monitor adoption and address gaps

4.2.3.10.3.2 Annual Training Refreshers

VAULT provides ongoing refresher training to ensure continued user proficiency as the system evolves. Refresher training is offered annually and on demand, particularly when new features are introduced; system updates occur, or regulatory requirements change. Updated training materials are delivered alongside system enhancements to ensure users have access to current and accurate information.

User Role	Training Content	Delivery Format	Completion Enforcement
OEPS / Agency Administrators	System configuration; user and role management; bulk operations; data quality	Live hands-on workshop	Required before admin access

User Role	Training Content	Delivery Format	Completion Enforcement
	dashboards; HL7 error hold queue management; coverage report builder; audit log review; exemption workflow administration; Read Replica access protocols	(recorded for on-demand replay); administrator manual; monthly OEPS-only office hours for first 90 days post-go-live	activation; completion tracked per account
Provider Office Staff / End Users	Patient search and registration; immunization entry; CDS forecasting usage; inventory management; HL7 submission troubleshooting; basic reporting; consumer portal explanation	On-demand video library per workflow; quick reference cards; in-application contextual help; provider portal with self-service training tracking	Required before provider access activation; OEPS can audit completion by provider
School Nurses / Public Health Partners	Roster management; exemption tracking and reporting; school-based compliance reports; bulk student record operations; oral health module workflows (where applicable)	Role-specific live session (recorded); school nurse quick-start guide; practice environment with WV-representative test data	Required before school nurse access activation
Annual refreshers + release updates	System enhancements from prior year; updated workflows; new reporting capabilities; regulatory or policy changes affecting system use	On-demand video updates per release cycle; optional live sessions for major enhancements; release notes with workflow change summaries	OEPS can require re-training on specific modules after major updates

How VAULT exceeds the mandatory requirement: The RFP requires training. VAULT enforces it through system configuration. Training completion is a gated precondition for account activation, not a recommendation. OEPS has real-time visibility into training completion per user and can generate compliance reports at any time.

4.2.3.11 Privacy

Requirement	VAULT Commitment and Approach
4.2.3.11.1 Privacy law compliance	VAULT complies with all applicable federal and State privacy laws and regulations, including the HIPAA Privacy and Security Rules, and applicable WV State data protection requirements. All personnel with

Requirement	VAULT Commitment and Approach
	data access are trained on applicable privacy requirements before accessing activation.
4.2.3.11.2 Audit logging	Comprehensive, tamper-resistant audit log: all user access events, logins, data additions, modifications, deletions, and exports. Minimum of 6-year retention. Logs available to OEPS at designated timeframes and on request. Access to audit logs is logged and access controlled.
4.2.3.11.3 Incident response / breach notification	Upon confirmed or suspected breach: VAULT immediately follows current OMIS Incident Reporting and Response Procedures: containment, investigation, impact assessment, Agency notification, and compliance with all applicable reporting requirements. Defined response timeline: initial Agency notification within 24 hours of discovery (consistent with HIPAA Breach Notification Rule and WV OMIS Incident Reporting requirements).
4.2.3.11.4 No secondary use	VAULT will not use, release, disclose, or otherwise make available any Agency data for any purpose not explicitly authorized under this contract without prior written Agency approval. No data monetization, no commercial analytics, no AI/ML training use.
4.2.3.11.5–11.8 Certifications	4.2.3.11.5 Certification of No Active Investigations VAULT complies with this requirement. VAULT certifies that it is not currently under investigation by any state or federal authority for a breach of data security. 4.2.3.11.6 Disclosure of Prior Incidents VAULT complies with this requirement. VAULT certifies that it has not been involved in any breach of data security. 4.2.3.11.7 Disclosure of Investigations and Corrective Actions VAULT complies with this requirement. VAULT certifies that it has not been subject to any prior or current investigations by any state or federal authority related to privacy or security of patient information. 4.2.3.11.7.1 Disclosure and Verification VAULT complies with this requirement. VAULT acknowledges the State's right to request supporting documentation and to conduct independent verification of information provided in this proposal. VAULT will fully cooperate with any such requests and will provide accurate, complete, and timely documentation as needed to support validation activities. VAULT affirms that all information provided regarding investigations, incidents, and compliance history is complete and accurate to the best of its knowledge. VAULT understands that failure to disclose relevant

Requirement	VAULT Commitment and Approach
	investigations may result in disqualification, contract termination, or other remedies, and has taken appropriate measures to ensure full and transparent disclosure. 4.2.3.11.8 Certification Regarding Legal Compliance VAULT complies with this requirement. VAULT certifies that it has not been subject to any prior or current investigations by any state or federal authority related to privacy or security of patient information. 4.2.3.11.9 Workforce Eligibility and Exclusions VAULT complies with this requirement. VAULT certifies that it does not employ any individuals who have been excluded or debarred by the federal government or any state government from participating in federal or state programs or contracts.
4.2.3.11.10 No secondary data use (AI/ML)	VAULT will not use IIS data for analytics, artificial intelligence, machine learning, model training, or any secondary commercial purpose without explicit prior written State approval.

4.2.3.12 Security and Audit Compliance

VAULT COMPLIES. OptimIIS operates within a layered security model covering infrastructure, application, access controls, monitoring, vulnerability management, incident response, and audit readiness. All security controls are enforced by system architecture and automated processes, not by policy alone.

Ref	Requirement	VAULT Implementation
4.2.3.12.1.1	FedRAMP Moderate/High authorization	OptimIIS is hosted exclusively within AWS infrastructure that holds FedRAMP Moderate authorization (AWS FedRAMP Package ID: F1603087869; listing at marketplace.fedramp.gov). VAULT is an authorized user of this FedRAMP-authorized infrastructure. AWS is the authorization holder, not VAULT. AWS authorization documentation provided to the Agency within 30 days of contract execution. VAULT acknowledges that SOC 2 Type II reports are supplemental evidence only and do not replace the FedRAMP requirement.
4.2.3.12.1.2	FIPS 140-2/3 validated cryptography	All cryptographic modules use FIPS 140-2 or FIPS 140-3 validated implementations from the AWS FIPS-validated cryptographic module suite. Applied to databases, data storage, backups, communications channels, administrative access, and all data exchange interfaces.

Ref	Requirement	VAULT Implementation
4.2.3.12.1.3	TLS 1.2/1.3	All data exchanges secured with TLS 1.2 minimum; TLS 1.3 supported. Approved cipher suites only. Updated within required timeframes as NIST guidance evolves. Applied to all browser connections, HL7/FHIR interfaces, API endpoints, and administrative access channels.
4.2.3.12.1.4	Ongoing compliance	Continuous monitoring of FedRAMP authorization, FIPS validation, and TLS support status. VAULT will notify the Agency of any changes within required timeframes. Annual compliance review with hosting provider.
4.2.3.12.2.1	SOC 2 Type II (initial)	Current SOC 2 Type II audit report covering 2025 will be provided to Agency within 60 days of contract execution. Coverage period ending no more than 12 months prior to submission.
4.2.3.12.2.2	SOC 2 Type II (annual)	Annual updated SOC 2 Type II reports delivered within 30 days of contract anniversary date for contract duration.
4.2.3.12.3	Penetration testing and vulnerability management	Third-party penetration testing annually per NIST 800-53. Report and remediation plan provided within 30 days of test completion. Critical/High findings remediated within 30 days. Continuous vulnerability scanning via SAST (per commit to CI/CD pipeline) and DAST (quarterly and post-major release). All third-party components tracked in dependency inventory; CVE monitoring continuously.
4.2.3.12.4	SSDLC per NIST SP 800-218	Documented SSDLC aligned with NIST SP 800-218. Security requirements are integrated through design, development, testing, deployment, and maintenance phases. SAST/DAST results are tracked through formal defect management. Critical/High findings remediated within 30 days.
4.2.3.12.5	Cloud provider attestations	Documentation provided confirming AWS: FedRAMP Moderate authorization; U.S.-based data storage and processing; compliance with applicable Executive Branch and OMIS security policies.
4.2.3.12.6	Vendor Attestation Form	Completed within 30 days of contract execution. Attests: U.S.-only data residency; SOC 2 submission timelines; pen testing and remediation protocols; cloud provider compliance; applicable State and federal cybersecurity and privacy requirements. Updated on request or upon material changes.
4.2.3.12.7	Incident response policy and plan	IR policy and plan aligned with NIST SP 800-61. Updated within 6 months of NIST revision or federal mandate change. Annual tabletop exercises; summary reports to Agency within 30 days. IR processes integrated with Agency's IR procedures. Policy available to Agency on request; certified annually.
4.2.3.12.8	Audit and attestation compliance	All security evidence provided to the Agency within 30 days of request, at no additional cost. Independent verification by Agency or Designee fully supported. Annual attestations provided; Critical/High remediation within 60 days. Future standards alignment: audits, attestations, and controls updated

Ref	Requirement	VAULT Implementation
		to reflect current NIST, FedRAMP, FIPS, and OMIS requirements.

Secure Software Development Lifecycle (SSDLC)

VAULT maintains a documented SSDLC aligned with NIST SP 800-218 (Secure Software Development Framework). Security requirements are integrated throughout system design, development, testing, deployment, and maintenance, not added as a last step.

- Static Application Security Testing (SAST) integrated into the development pipeline for each code commit or build
- Dynamic Application Security Testing (DAST) conducted at least quarterly and following major releases or production updates
- All identified vulnerabilities documented, prioritized, and tracked through resolution; critical and high-risk findings remediated within 30 calendar days unless otherwise approved by the Agency
- Third-party component security: dependency inventories maintained and monitored for known vulnerabilities; components updated promptly to address identified risks
- Continuous monitoring of system activity, infrastructure events, application behavior, and security alerts supported by automated code scanning

Third-Party Penetration Testing

VAULT conducts annual third-party penetration testing in accordance with NIST SP 800-53. The full penetration test report and remediation plan are provided to the Agency within 30 days of test completion. Findings are incorporated into VAULT's vulnerability management program and managed in accordance with established remediation timelines. VAULT does not self-assess. Independent third-party testers provide objective validation of security controls annually and after major system changes.

4.2.3.13 Acceptance Criteria

VAULT COMPLIES. No portion of the system is accepted; no billing commences, and no legacy IIS decommission proceeds until the Agency has issued formal written Notice of Acceptance. Acceptance is treated as a progressive validation lifecycle embedded throughout implementation, not a single final event.

Acceptance Element	VAULT Commitment
4.2.3.13.1 General acceptance requirement	System accepted only after Agency verifies in writing that all functional, technical, security, interoperability, and performance requirements are fully satisfied. No partial acceptance. No portion of the system is considered accepted until all Acceptance activities are approved in writing.
4.2.3.13.2.1 Functional testing	VAULT supports comprehensive functional testing of all modules and workflows: immunization of workflows, patient management, reporting, provider management, administrative functions, and all WV-specific

Acceptance Element	VAULT Commitment
	configurations. Scenario-based test cases reflecting real-world WV workflows; validation against RFP requirements and approved Implementation Plan.
4.2.3.13.2.2 Data migration validation	Structured, repeatable migration validation: data mapping and transformation verification; multiple test migration cycles; record-level reconciliation (patient count ~3M, vaccination count ~32M, user count 24,000, provider count 1,645+) between source and target; error rate threshold <0.1% required. Detailed reconciliation reports provided to the Agency.
4.2.3.13.2.3 Interface / interoperability testing	All interfaces tested end-to-end before any production cutover: HL7 v2.5.1 (VXU, QBP, ACK); FHIR-R4 API; IIS-to-IIS exchange; HIE/EHR/pharmacy/CDC connections; WV-specific non-standard protocol interfaces. Each interface accepted individually, with no batch cutover.
4.2.3.13.2.4 Performance and load testing	Load and stress testing against WV's documented six-month benchmarks: 200+ concurrent non-HL7 users, 8M+ QDPs/6 months, 1M+ VXUs/6 months. Peak demand scenarios including emergency response surge. Results documented and reviewed with Agency before go-live authorization.
4.2.3.13.2.5 Security and access control verification	Verification of all RBAC configurations across 7 WV role types and 24,000 accounts; MFA enforcement; audit logging completeness; encryption at rest and in transit; FedRAMP compliance documentation; SOC 2 Type II report submission.
4.2.3.13.2.6 UAT	Agency-led UAT supported by VAULT: structured test scripts per workflow; VAULT staff on-call during all UAT sessions; real-time issue tracking and resolution. All issues documented, classified, and resolved before UAT sign-off. No go-live without written OEPS UAT sign-off.
4.2.3.13.3 Acceptance criteria (all must be met)	(1) All functionality fully implemented per approved Implementation Plan and RFP requirements. (2) All interfaces operational and exchanging data accurately. (3) All Critical and High defects resolved; no Medium or Low defects materially impacting operations. (4) All documentation delivered and approved. (5) All security controls are validated. (6) Stabilization period completed without material errors. (7) All contractual deliverables are approved.
4.2.3.13.4 Formal Acceptance	Written Notice of Acceptance issued by Agency only after all conditions above are met and verified. VAULT supports Agency in preparing Notice of Acceptance documentation.
4.2.3.13.5 Rejection and retesting	VAULT accepts Agency's right to reject. Upon rejection: all deficiencies addressed at no cost → corrective action plan provided → retesting supported → documentation updated. No additional charges for any retesting activity required to achieve Acceptance.
4.2.3.13.6 Prorated fees	Annual fees prorated from the date of formal written Acceptance. No fees assessed for any period prior to Acceptance. Billing calculation: remaining days in contract year / 365 × annual fee.
4.2.3.13.7 Billing limits	Annual fees: billed as annual advance (12-month period) or quarterly advance (subject to Agency approval). No multi-year lump sum invoicing. No billing for services not yet been rendered or beyond the upcoming billing period.

Section 4.2.3 Summary: Mandatory Requirements VAULT affirms full compliance with all 13 mandatory project requirements. Where VAULT's approach exceeds the mandatory threshold: SLA uptime (99.9% monthly vs. minimum requirement) training enforcement (system-gated vs. recommended), performance monitoring (continuous Datadog APM vs. periodic), and version upgrade methodology (zero-downtime bi-weekly releases vs. periodic scheduled upgrades).

VAULT Technologies brings the precise combination of capabilities West Virginia needs: purpose-built IIS technology in active production, interoperability at national scale, and real-world emergency response experience earned during COVID-19. The sections below document these qualifications in the format the RFP requires.

4.3.0 Demonstrated Experience Operating Statewide Immunization Infrastructure

West Virginia requires an IIS partner capable of supporting large-scale immunization operations, complex interoperability requirements, mandatory statewide reporting, and continuous service delivery for thousands of providers and public health stakeholders. While many vendors can demonstrate experience operating registries, VAULT brings experience operating the broader immunization infrastructure required to support modern public health programs at state and national scale.

VAULT's solutions currently support or have supported millions of patient records, tens of millions of immunization encounters, nationwide provider networks, and interoperability with more than 30 Immunization Information Systems. These implementations have required VAULT to perform many of the same functions required of a statewide IIS, including patient record management, forecasting, reminder/recall, provider onboarding and management, vaccine inventory management, reporting, consumer access, patient matching, deduplication, HL7 interoperability, and interstate immunization data exchange.

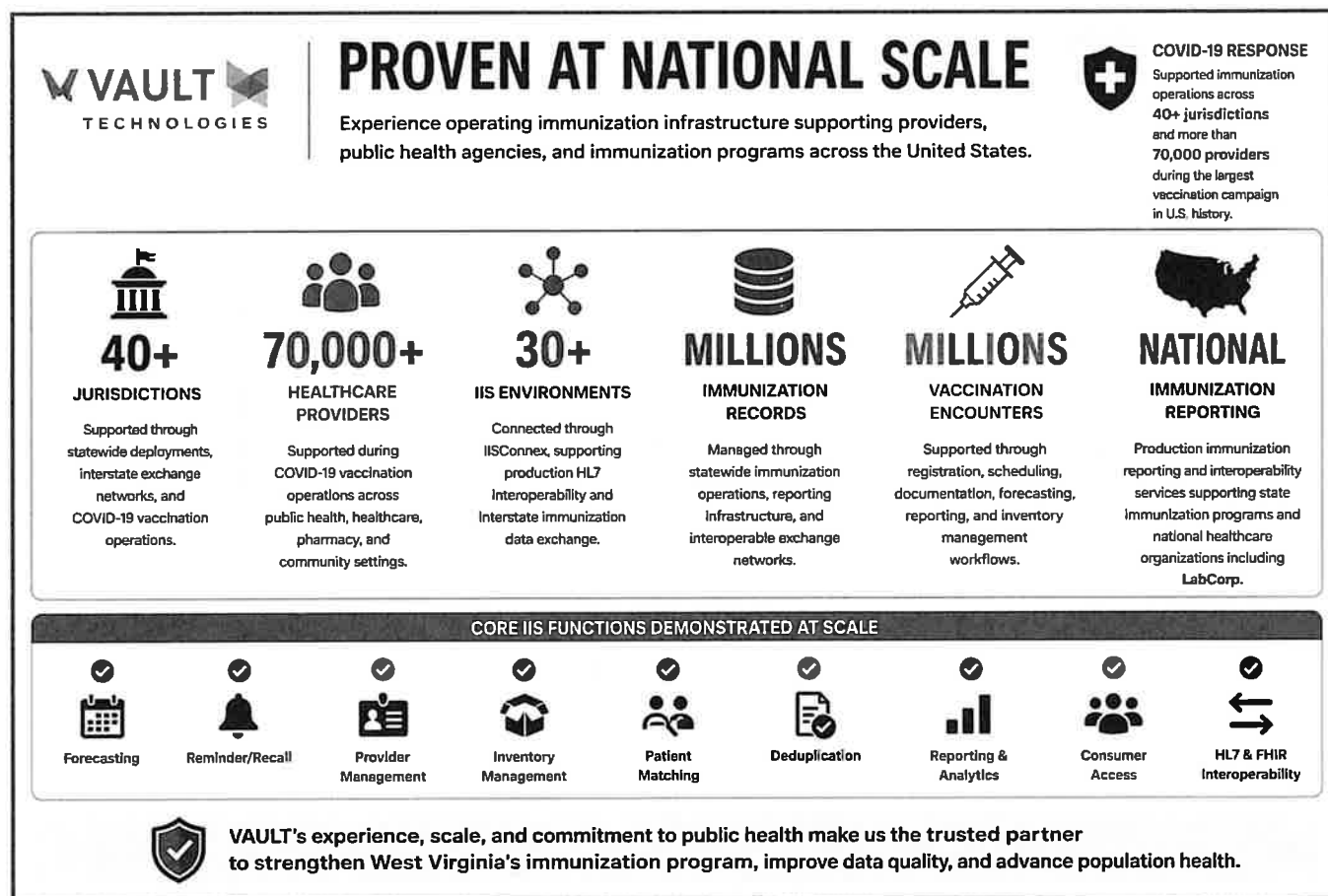
In Maryland, VAULT has supported statewide immunization operations serving public health agencies, healthcare providers, pharmacies, schools, and community organizations. The implementation required management of large-scale immunization workflows, provider engagement, inventory management, forecasting, reporting, and coordination across diverse stakeholder groups operating under state and federal public health requirements.

Through IISConnex, VAULT currently supports production immunization interoperability across more than 30 IIS jurisdictions. IISConnex performs critical IIS functions including HL7 message processing, patient matching, deduplication, validation, record reconciliation, routing, and interstate immunization data exchange. This experience provides VAULT with direct operational knowledge of the interoperability challenges faced by modern IIS environments.

VAULT also operates production immunization reporting infrastructure supporting LabCorp, one of the nation's largest diagnostic laboratory organizations. This implementation required onboarding and managing connections with numerous state immunization programs, supporting jurisdiction-specific reporting requirements, maintaining high-volume HL7 data exchange, and ensuring reliable immunization reporting across multiple public health environments.

During the COVID-19 response, VAULT's immunization platform supported more than 70,000 healthcare providers across more than 40 jurisdictions and facilitated tens of millions of vaccination encounters. The platform supported registration, scheduling, documentation, forecasting, inventory management, reporting, consumer access, and interoperability functions at a scale rarely experienced by traditional IIS implementations.

Collectively, these deployments demonstrate VAULT's ability to operate the core functional, technical, operational, and interoperability components required of a statewide IIS while also providing West Virginia with capabilities that strengthen routine immunization programs, emergency response operations, and public health service delivery.



4.3.1 Qualifications and Experience Information

4.3.1.1 Business

VAULT Technologies, LLC is a public health-focused technology company headquartered in Pikesville, Maryland, specializing in the development and operation of secure, cloud-native platforms supporting immunization programs and public health operations. VAULT is the developer of the VAULT Immunization operating system, a complete public health operating platform spanning immunization registry operations, clinic management, interoperability, community outreach, consumer access, and billing. OptimIIS, the authoritative IIS registry at the

center of the ecosystem, is designed to meet CDC IIS Functional Standards v4.1 and support large-scale statewide immunization programs.

VAULT's guiding principle, "**by public health, for public health**," is grounded in the company's founding leadership. VAULT is led by a public health professional with nearly 20 years of immunization program experience, including direct leadership of a county immunization program where early prototypes of an IIS were developed and used operationally. This background directly informed the architecture of the VAULT Immunization Ecosystem: the platform supports not only data collection but the full lifecycle of public health operations, from provider onboarding and clinic operations through outreach, reporting, and financial sustainability.

VAULT's platform has been deployed across more than 40 jurisdictions and has supported tens of millions of immunization encounters, including large-scale emergency response efforts. During the COVID-19 pandemic, VAULT's PrepMod platform was among the first large-scale applications deployed nationally to support mass vaccination, enabling more than 70,000 healthcare providers across 40+ states to schedule, administer, and report immunization encounters in real time. This proven at-scale experience directly validates VAULT's ability to operate the State of West Virginia's IIS at the volume and complexity the RFP requires.

VAULT's core government health and human services portfolio include:

Platform	Function	Current Scale
OptimIIS	CDC-compliant IIS registry; HL7 v2.5.1 + FHIR-R4; real-time deduplication; ICE-based ACIP forecasting; consumer portal	Active in production; statewide deployments
Interoperability System	Bidirectional interoperability engine; HL7, FHIR-R4, and non-standard protocols	30+ state IIS jurisdictions in production
Mass Vaccination Module	End-to-end clinic operations: scheduling, check-in, encounter management, offline capability	70,000+ providers, 40+ states during COVID-19
Community and Mobile Clinic Coordination Module	Community outreach, workforce coordination, mobile clinic planning	Active across multiple jurisdictions
Third-Party Billing Module	Third-party and VFC billing, claims, and reimbursement integrated into the encounter record	Active in multiple state and LHD deployments

4.3.1.2 Corporate Identity

Identity Element	Details
Legal name	VAULT Technologies, LLC
Doing business as	VAULT Technologies
Headquarters	1 Réservoir Circle, Suite 101, Pikesville, MD 21208
Phone	+1 888-862-2920

Identity Element	Details
Fax	304-558-3970
Contact	Tiffany Tate, CEO tiffany.tate@vaulttechinc.com +1 888-862-2920 Ext. 1
Website	Vaulttechinc.com
FEIN	92-0384326
Parent corporation	None. VAULT Technologies, LLC has no parent company.
Subsidiaries	None
SAM / UEI	N7L9QD6LQQR9

4.3.1.3 Organization and Structure

VAULT operates through six integrated business units designed to support the complete WV IIS contract lifecycle, from implementation through ongoing operations. The structure is fully U.S.-based with no offshore components.

Business Unit	Function	Role on WV Contract
Product & Engineering	System architecture, development, interoperability, and security of OptimIIS and all ecosystem components	Configuration, data migration tooling, interface development, FHIR/HL7 compliance, and bi-weekly platform releases
Implementation & Delivery	System configuration, deployment, and data migration	Leads WV-specific configuration, migration sprints, interface testing, and go-live preparation
Customer Success & Account Management	Primary client interface; roadmap alignment; escalation point for program-level issues	OEPS's day-to-day program contact; product roadmap access; enhancement prioritization
Operations & M&O	Post-go-live system stability, monitoring, patching, and performance; 24/7 SRE on-call	Manages all production infrastructure; SLA monitoring; monthly reporting to OEPS
Training & OCM	Role-based training delivery, materials, on-demand library	Delivers all WV training (OEPS admins, providers, school nurses); maintains training library post-go-live
Support & QA	Help desk, issue tracking, testing, and ongoing quality assurance	Manages all support tickets; defect triage and resolution; testing across release cycles

4.3.1.4 Locations

Location Element	Details
Headquarters	1 Reservoir Circle, Suite 101, Pikesville, MD 21208 (primary operations hub for all business functions)
Team model	Distributed U.S.-based team; all personnel located within the United States; no offshore resources
WV contract support	All implementation, operations, and support functions performed by U.S.-based personnel
Cloud infrastructure	Hosted exclusively on AWS U.S.-based data centers; no data stored, processed, or transmitted outside the United States under any scenario
Overseas locations	None. VAULT will not utilize any overseas locations, personnel, or infrastructure to support this contract.
Additional offices	None

4.3.1.5 References

Reference 1: Maryland Department of Health (DOH)

Element	Details
Organization	Maryland Department of Health
Address	201 W. Preston St., Suite 318, Baltimore, MD 21201
Reference Contact	Greg Reed
Title	CDC Regional Field Supervisor
Phone	410-767-6679
Email	greg.reed@maryland.gov
Scope of Services	Implementation, ongoing enhancement, and operational support of statewide immunization infrastructure performing many of the same operational and clinical functions required of a modern IIS, including patient registration, vaccination documentation, provider management, forecasting, reminder/recall, inventory management, reporting, interoperability, and integration with Maryland's IIS. Five years of continuous production operations and platform development supporting statewide immunization programs.
Length of Engagement	2020 to present (5+ years)
Services Covered	Production operations; SaaS hosting; immunization workflow management; forecasting and reminder/recall; HL7 interoperability and data exchange; provider onboarding and support; reporting and analytics; managed services; IIS integration; public health program support.

Element	Details
Organization	Labcorp Employer Services
Address	6992 Columbia Gateway Drive, Suite 100, Columbia, MD 21046
Reference Contact	Juley Jenkins, RN
Title	Manager
Phone	720-557-0729
Email	jenkj10@Labcorp.com
Scope of Services	Implementation and ongoing operation of nationwide immunization interoperability infrastructure connecting healthcare organizations and more than 30 state IIS jurisdictions. Supports core IIS interoperability functions including HL7 message validation, normalization, routing, jurisdiction-specific business rules, bidirectional exchange, data quality management, and large-scale immunization reporting.
Length of Engagement	2023 to present (2+ years)
Services Covered	SaaS hosting; production operations; HL7 interoperability and data exchange; validation and data quality management; transaction monitoring; jurisdiction-specific interface support; managed services; national immunization reporting; public health interoperability support

Reference 3: Bird's Eye Medical

Element	Details
Organization	Bird's Eye Medical
Address	2641 Willamette Drive NE, Suite A, Lacey, WA 98516
Reference Contact	Nancy Ho
Title	Principal / Owner
Phone	206-661-1970
Email	nancyh@birdseyemedical.com
Scope of Services	Implementation and ongoing operational support of immunization infrastructure supporting local health departments and school-based vaccination programs across Indiana. Services include patient registration, vaccination documentation, provider management, inventory management, HL7 reporting to the state IIS, data quality workflows, interoperability support, and reimbursement operations across a distributed multi-site public health network.
Length of Engagement	2024 to present (ongoing)

Services Covered	Production operations; immunization workflow management; public health platform implementation; HL7 interoperability and IIS reporting; provider onboarding and training; data quality support; reimbursement workflow management; managed services; public health program support.
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Demonstrated IIS Functional Experience

Over the past decade, OptimIIS and its surrounding ecosystem has supported many of the same capabilities required of a statewide Immunization Information System, including:

- Patient registration and record management
- Patient matching and deduplication
- Vaccine forecasting and clinical decision support
- Reminder and recall communications
- Provider enrollment and management
- Vaccine ordering and inventory management
- Coverage assessment and reporting
- Consumer access to immunization records
- Secure role-based access control
- Interoperability with external health systems
- Vaccination documentation and clinical workflows
- Population health outreach and engagement

These capabilities have been exercised at scale through statewide and national deployments supporting millions of vaccination encounters, tens of thousands of healthcare providers, and integrations across more than 40 jurisdictions. OptimIIS serves as the authoritative registry within that broader ecosystem, which already performs nearly every major operational, clinical, interoperability, consumer engagement, inventory management, provider management, forecasting, reminder/recall, and reporting function required of a modern IIS.

4.3.2 Mandatory Qualification/Experience Requirements

4.3.2.1 Organizational Experience with IIS and Public Health Systems

Pass/Fail element. The RFP requires vendors to demonstrate organizational experience with Immunization Information Systems and large-scale public health data systems. Failure to meet this requirement leads to disqualification. VAULT addresses it directly, with an honest accounting of both what VAULT has delivered and where its documented scale falls short of West Virginia's.

Addressing Scale: WV's Environment vs. VAULT's Reference Portfolio

The honest case: WV's IIS manages ~3,000,000 patient records, ~32,000,000 vaccination records, and 24,000 user accounts. These numbers exceed the documented scale of VAULT's individual reference engagements. This

section addresses that gap directly, because evaluators will see it, and an unexplained gap score worse than a clear explanation.

Scale Dimension	WV Requirement	VAULT's Demonstrated Scale	Gap Assessment
Patient records	~3,000,000	Maryland PrepMod: 2,000,000+; IISConnex: routes data for 30+ state IIS systems collectively managing tens of millions of records	Small absolute gap (2M vs. 3M); OptimIIS architecture is horizontally scalable. AWS Aurora auto-scaling and multi-AZ deployment; no architectural ceiling at 3M records
Vaccination records	~32,000,000	PrepMod supported tens of millions of immunization encounters during COVID-19 across 40+ states; IISConnex processes national-scale HL7 volume	COVID-19 PrepMod deployments processed equivalent volumes; OptimIIS production environment sized for comparable loads
Concurrent users	200+ non-HL7	Maryland statewide deployment supports comparable concurrent user load; COVID-19 PrepMod supported 70,000+ providers simultaneously	VAULT's AWS auto-scaling infrastructure is sized for WV's documented benchmarks
HL7 transaction volume	8M+ QDPs, 1M+ VXUs per 6 months	IISConnex processes high-volume national HL7 exchange across 30+ state IIS systems	IISConnex's multi-jurisdictional routing handles volumes exceeding WV's stated requirements
State IIS operation	Full standalone IIS	OptimIIS is a full standalone IIS that meets all requirements of this procurement. As part of the broader VAULT ecosystem, WV gains access to capabilities that support routine immunization operations, large-scale vaccination initiatives, interstate data exchange, workforce mobilization, emergency response, and public health program management.	No gap exists. West Virginia receives a complete IIS plus a broader operational ecosystem that extends the value of the State's IIS investment.

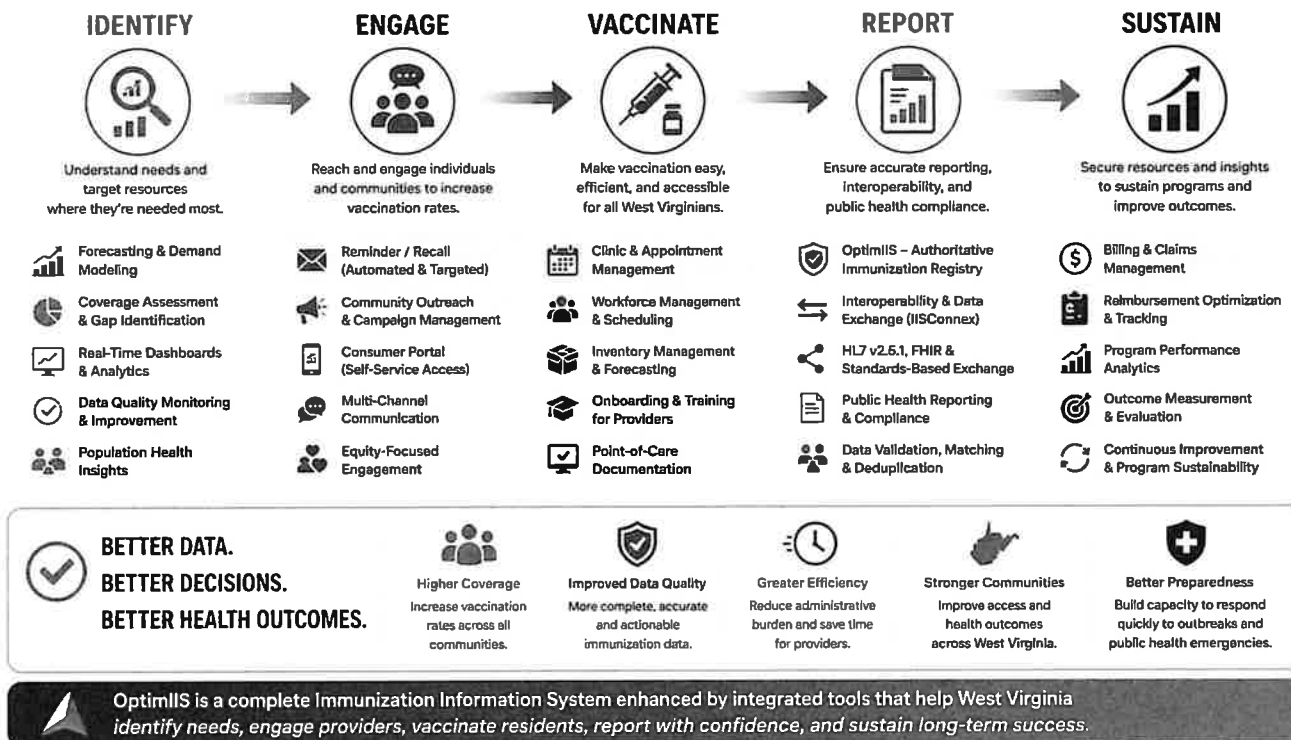
Mandatory Qualification Evidence

Mandatory Requirement	VAULT Evidence
IIS implementation or operations within past 5 years	(1) Maryland DOH PrepMod: statewide immunization operations supporting patient registration, vaccination documentation, forecasting, reminder/recall, provider management, inventory management, reporting, and consumer access, 2021-present; active. (2) IISConnex: interstate immunization data exchange supporting HL7 interoperability, patient matching, deduplication, and record sharing across 30+ IIS environments, 2023-present; active. (3) Bird's Eye Medical: school-based immunization operations supporting registration, consent, scheduling, reporting, and compliance workflows, 2024-present; active. (4) COVID-19 response: immunization operations supporting 70,000+ providers across 40+ jurisdictions with large-scale registration, documentation, forecasting, inventory management, reporting, and federal data exchange, 2020-2022.
Multi-stakeholder regulated public health environment	Maryland implementation coordinated across state agencies, providers, schools, and community organizations under HIPAA, CDC IIS Functional Standards, and Maryland-specific regulations. IISConnex operates under data use agreements with 30+ state health departments.
High-volume operations at scale	COVID-19 response: 70,000+ providers, 40+ states, tens of millions of immunization encounters in production. IISConnex: continuous high-volume national HL7 exchange. Maryland: statewide multi-provider network in continuous production.
Federal system integration	VTrckS bidirectional integration in production supporting vaccine ordering and inventory workflows. Integration with 30+ federally-funded IISs.
Interoperability standards (HL7 and FHIR)	IISConnex: HL7 v2.5.1 production across 30+ state systems. OptimIIS: FHIR-R4 production. CDSi/ICE: CDC-endorsed forecasting engine in production.
Experience within 5-year requirement	All cited references commenced in 2020 or later; all active engagements. Maryland (2021), Labcorp IISConnex (2023), Bird's Eye Medical (2024), COVID-19 PrepMod deployments (2020).



HOW OPTIMIIS IMPROVES IMMUNIZATION OUTCOMES

An integrated approach that drives better data, better decisions, and better health outcomes for West Virginia.



Key Personnel Qualifications

Project Manager: Dr. Montressa Washington, PMP (see 4.2.3.9 for full biography). Key attributes: 20+ years public health systems and project management; PMP certified; prior experience at IBM and Accenture. Named implementations: Maryland Department of Health (OCM Lead / Implementation Manager, January 2021 – Present); Labcorp / IISConnex (Functional Lead / Stakeholder Engagement, January 2023 – Present).

Technical staff: VAULT's implementation and operations team includes experts in public health informatics, HL7 and FHIR interoperability, AWS cloud infrastructure, application security (SSDLC), and CDC IIS Functional Standards. Relevant certifications include PMP, AWS certifications, and security certifications held by cloud and security personnel.

VAULT's staffing approach: Personnel are assigned based on role-specific expertise. The WV contract will be supported by dedicated resources across Product & Engineering (OptimIIS and IISConnex development), Implementation & Delivery (WV-specific configuration and migration), Operations & M&O (post-go-live SRE), Training & OCM (all WV user training), and Customer Success & Account Management (OEPS primary contact). VAULT does not reassign key personnel to other contracts without 30 days of advance notice and Agency for written concurrence.

Section 4.3 Summary: Qualifications and Experience VAULT Technologies is an active, U.S.-based public health technology company with demonstrated experience deploying immunization operations platforms in government health agency environments within the past five years. VAULT's Immunization Ecosystem is in production across multiple jurisdictions, including a statewide deployment for the Maryland Department of Health (2021–present) and national-scale interoperability operations through IISConnex (30+ state IIS systems). The scale and standalone IIS questions are addressed directly and honestly in 4.3.2.1; VAULT asks evaluators to score those responses on their merits.

Exhibit — Training Curriculum and Course Catalog

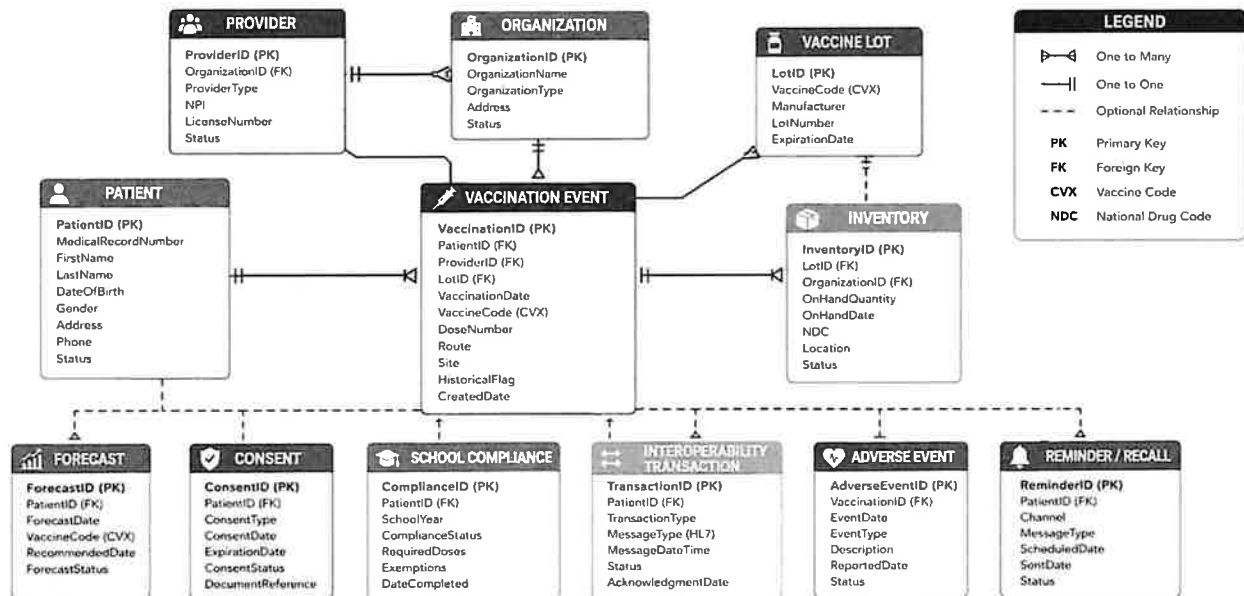
<i>Role Group</i>	<i>Course Title</i>	<i>Delivery Format</i>	<i>Duration Completion Requirement</i>	
Registry Administrators	OptimIIS System Administration	Instructor-Led	4 Hours	Required
Registry Administrators	User Management & Security Administration	Instructor-Led	2 Hours	Required
Registry Administrators	Reporting, Analytics & Data Quality Monitoring	Instructor-Led	3 Hours	Required
Registry Administrators	Interoperability & Interface Monitoring	Instructor-Led	2 Hours	Required
Clinical Users	Clinical Workflow & Vaccination Documentation	Instructor-Led or Virtual	2 Hours	Required
Clinical Users	Forecasting, Reminder/Recall & Inventory Management	Virtual	90 Minutes	Recommended
Clinical Users	School, Pharmacy & Provider Workflows	Self-Paced	60 Minutes	Recommended
Public Health Users	Coverage Assessment & Population Analytics	Virtual	90 Minutes	Recommended
Public Health Users	Outbreak Response & Emergency Operations	Instructor-Led	2 Hours	Recommended
Public Health Users	Community Outreach & Vaccination Campaign Management	Self-Paced	60 Minutes	Recommended
All Users	Consumer Access Portal Overview	Self-Paced	30 Minutes	Optional
All Users	Security Awareness & Privacy Compliance	Self-Paced	30 Minutes	Required
All Users	New Feature Updates & Refresher Training	Virtual	60 Minutes	As Needed

Role Group	Course Title	Delivery Format	Duration	Completion Requirement
Help Desk & Support Staff	Troubleshooting, Support & Escalation Procedures	Instructor-Led	2 Hours	Required



Exhibit Y – Conceptual Immunization Information System Data Model

This conceptual entity relationship diagram illustrates major data domains and relationships that support the core functions of OptimIS.



THE OPTIMIS DATA MODEL SUPPORTS CORE IIS FUNCTIONS

The OptimIS data model supports core IIS functions including immunization record management, forecasting, inventory management, provider management, interoperability with external systems, consent management, school compliance, reporting, patient matching, and consumer access.



Patient Matching & Demographics

Consent & Privacy Management



Immunization Record Management

Reporting & Analytics



Interoperability & Data Exchange

Provider & Organization Management

This is a conceptual representation. OptimIS' physical data model includes additional entities, attributes, and relationships to support operational, audit, and historical requirements.

Immunization Information System (IIS) Baseline Requirements Traceability Matrix (RTM)

Update Released July 2025

This requirements traceability matrix (RTM) contains draft baseline functional and non-functional requirements for an immunization information system (IIS). The requirements clarify minimum expectations for what IIS technology must do and how it must operate to support IIS Functional Standards and programmatic and immunization stakeholder needs. The functional requirements describe intended behaviors of an IIS to support business processes and tasks, by function and capability. The non-functional requirements convey technical requirements related to how a system must operate, by attribute and sub-characteristic. An embedded IIS Functional Model presents a visual depiction of the core functions, capabilities and attributes of IIS and serves as a companion to the requirements.

This RTM is intended to be used by immunization programs as a starting point for the procurement of an IIS platform, module or enhancement. The RTM should be used throughout the system development life cycle (SDLC) to ensure requirements are met in a final product or system. Immunization programs and IIS may also use the IIS Functional Model and the requirements within this RTM to help assess and identify gaps in current IIS functions, capabilities and technical quality and provide a roadmap for future development within or across jurisdictions.

Contents

Guidance: Using the RTM	Step-by-step guidance and helpful hints/notes for using the RTM as part of a procurement process.
Functional Model	Draft IIS Functional Model (FM), a visual depiction of IIS functions and capabilities and attributes.
FM Descriptions	Descriptions of the IIS Functional Model functions and capabilities and attributes; also provides an indication of total requirements by function/category.
RTM Format	Description of how the RTM is structured for presentation of the requirements.
Requirements by Function/Grouping:	
Admin System	Requirements related to the function: Administer System
Manage Orgs	Requirements related to the function: Manage Organizations and Facilities
Manage Users	Requirements related to the function: Manage Users
Interop	Requirements related to the function: Support Interoperability
Data Quality	Requirements related to the function: Ensure Data Quality
Eval Forecast	Requirements related to the function: Evaluate & Forecast
Manage Pt Iz Record	Requirements related to the function: Manage Patient & Immunization Records
Manage Vaccine Inventory	Requirements related to the function: Manage Vaccine Inventory
Data Access	Requirements related to the function: Provide Data Access
Non-functional	Technical requirements across key attributes
Glossary	List of terms used in requirements and their definitions
Crosswalk to FS	Compare the Functional Model to the IIS Functional Standards (FS)

This RTM was developed by the Public Health Informatics Institute, in partnership with AIRA and CDC and with financial support from CDC under Cooperative Agreement number 6 NH23IP922664-01. Questions, comments and suggestions are welcomed at iis@phii.org.



Guidance for leveraging the RTM workbook in a procurement

[Return to Cover Page](#)

Suggested steps and helpful hints for immunization programs and IIS when using the IIS Functional Model and requirements within this RTM as part of a procurement and system development life cycle.

1. Identify the scope of the procurement

- Are you looking to procure an IIS platform or a specific module or enhancement?
- Identify which functions and capabilities within the IIS Functional Model may relate to your project scope.
- What technologies/systems do you have access to within your jurisdiction that will fulfill certain functions/capabilities/requirements?
- What technologies/systems will need to be integrated with the procured solution?
- Use the RTM to identify the requirements in scope.

2. Identify stakeholders/representatives to be included in the requirements review and validation process (and will be included in user acceptance testing)

- Include people that do the work, i.e., staff from across the IIS and immunization program who will be using the system/module/enhancement being procured.
- Include representatives from IT, as appropriate, e.g., a jurisdictional IT security officer.
- Consider validating requirements with end users to ensure completeness and accuracy and to inform prioritization.
- Engage with the procurement office early in the process to fully understand jurisdictional requirements, policies, templates, approval processes, and timelines.

3. Gather existing business process documentation for reference

- Gather standard operating procedures, documented workflows, business process analysis documents, help desk and tickets.
- These materials will assist in the review and validation of the requirements within the RTM.

4. Kickoff the requirements review and validation process

- Identify reviewers for the functions and requirements within scope, considering individuals' subject matter expertise.
- Schedule and conduct a meeting with all stakeholders/representatives to discuss the requirement review and validation plan.
- Introduce the Functional Model functions, capabilities and/or attributes in scope.
- Orient the group to the RTM format and contents, including the glossary of terms.
- Review the project schedule and individual responsibilities.

5. Review and validate requirements

- Review the requirements by tab with the appropriate program staff and/or impacted stakeholders (consider daily facilitated review sessions). Review the requirements based on current issues, concerns, challenges to ensure/mitigate current issues, concerns, etc. (using documentation gathered in step 3).
- Discuss and define jurisdiction-specific needs and requirements. In particular, consider requirements that include 'as per jurisdictional policy,' those indicating 'user-defined parameters,' and non-functional requirements where jurisdiction-specific values should be entered.
- Validate the requirements in terms of their:
 - * Completeness and accuracy: add jurisdiction-specific requirements in a separate tab (included in the RTM workbook) or as additional rows in the appropriate existing tab.
 - * Clarity: offer clarifications as comments in the "Comments" column. CDC strongly recommends not altering the wording of the requirements in the RTM.
 - * Priority: CDC strongly recommends that values listed in the "Priority: E, O (essential, optional)" column remain as is unless jurisdictional law/policy says otherwise.

6. Approve the final set of requirements

- Gain approval of the final requirements from program and jurisdictional IT leadership, as appropriate.
- Use the "Req. #" column on each tab to assign a unique identifier, which will facilitate traceability throughout the development lifecycle.

7. Include the requirements in the solicitation to inform vendor selection.

- Conduct a final re-validation of the requirements: what has changed? Are the requirements still accurate and relevant? Have any priorities changed?
- Work with your procurement office to ensure your requirements are incorporated into your solicitation. Attach or otherwise incorporate the RTM or requirements listing based on jurisdictional policy.
- Provide instructions for solicitation respondents to comment on each requirement, using the "Vendor Response" and "Vendor Comments" columns.
- Review responses and conduct due diligence to determine a solution/vendor that best meets your needs.

8. Work with the selected vendor on configuration and specifications, as needed.

- Ensure that your essential requirements are met.
- Review vendor system documentation to determine potential gaps for future consideration.

9. Test the delivered solution to ensure requirements are met.

- Refer to the vendor documentation to control the quality and completeness of the procured solution in meeting the requirements within the RTM.
- Add columns to the RTM for further traceability of the requirements through the SDLC. For example, 'Script #' and 'Tester' columns can be included to ensure each requirement has a corresponding test and tester during user acceptance testing.
- Identify individuals who will be involved in user acceptance testing; ensure these staff are prepared for the testing process and know how to document testing results.

10. Update business processes & documentation, as needed

- Update standard operating procedures to reflect and refine staff interaction with the new technology.
- Be sure to train internal staff as well as external end-users.

Helpful Hints and Notes

- The RTM can be used in conjunction with requirements definition tools, such as task flow diagrams. (For more information on PHII's Collaborative Requirements Development
- On each tab, high-level requirements are shaded in blue; rows beneath each high level requirement provide further detail.
- jurisdiction name.
- Tabs can be added to the RTM to encompass business processes or business rules within the workbook.
- Columns can be added to the RTM for further traceability of the requirements through the design, build, test and release activities. For example, a 'Script #' column can be
- To be most effective in tracking a solution that meets program requirements, the RTM must be maintained throughout the system development life cycle.
- differentiate those required for Day 1 and those that could be delivered in future releases.
- Consider using an additional priority designation of 'R' for 'Required by Law' to indicate requirements that stem from jurisdictional laws/administrative rules. Provide a reference to the statute/rule.



Immunization Information System (IIS) Functional Model

The IIS Functional Model presents a framework and terminology for conveying and communicating the core functions, capabilities and attributes of IIS. These systems, whether as a single integrated IIS or as a set of interoperable modules, support public health immunization programs in achieving the **CDC IIS Functional Standards*** and in providing trusted data and information to improve clinical immunization practice, increase vaccination and reduce vaccine-preventable disease.

The model also serves as a companion and index to the **IIS Baseline Requirements Traceability Matrix (RTM)**, which provides detailed requirements across IIS functions, capabilities and attributes. The RTM and other requirements tools can be found at phil.org/iis-requirements.

IIS Core Functions and Capabilities

These functions and capabilities represent core functionality of IIS. Refer to the **IIS Baseline RTM** for descriptions and functional requirements associated with each.

Administer System	Manage Organizations & Facilities	Manage Users
- Hierarchy configuration - System configuration - User roles & permissions - System alerts	- Organization/facility search - Add, edit, inactivate organization/facility - VFC/vaccine program enrollment - Organization/facility outreach	- User search - Add, edit, inactivate user - Authentication & authorization - Password management
Support Interoperability	Ensure Data Quality	Evaluate & Forecast
- Onboarding - Interfaces - Data exchange	- Patient matching & deduplication - Vaccination event matching & deduplication	- Clinical decision support - Reminder/recall - Coverage reports
Manage Patient & Immunization Records	Manage Vaccine Inventory	Provide Data Access
- Patient search - Add, edit patient demographics - Patient status - Patient consent - Add, edit patient immunization - Print/export record - Mass vaccination	- Vaccine inventory search - Add, edit vaccine inventory - Vaccine ordering - Review/approve order - Vaccine decrementing - Vaccine inventory reconciliation - Vaccine transfer - Vaccine wastage - Vaccine expiration	- Standard reports - Print/export reports - Ad hoc queries & reports - Consumer access

IIS Attributes

These attributes represent the technical characteristics of an IIS necessary to support immunization programs and stakeholders. Refer to the **IIS Baseline RTM** for descriptions and non-functional requirements associated with each.

Performance Efficiency	Usability	Reliability	Security	Maintainability	Portability
- Time behavior - Resource utilization - Capacity	- Operability - User error protection - Accessibility	- Availability - Fault tolerance - Recoverability	- Confidentiality - Non-repudiation - Accountability - Authenticity	Analyzability	- Adaptability - Installability

* <https://www.cdc.gov/vaccines/programs/iis/func-stds.html>

This resource was developed by the Public Health Informatics Institute in 2020, in collaboration with AIRA and CDC, with financial support from CDC under Cooperative Agreement number 6- NU38OT000316. Questions, comments and suggestions are welcomed at phil.org/iiscontact.

Tab Name	# of Reqs	Function	Function Description	Capability	Capability Description
Admin System	61	Administer System	Management of global system settings and alerts, including set up of user roles and permissions.	Hierarchy Configuration System Configuration User Roles and Permissions System Alerts	-- ability to create hierarchy that informs the association between geographical levels within the jurisdiction and among organizations, facilities, providers and users -- ability to define system-wide settings, such as management of code tables -- ability to define and manage user roles and use role permissions to perform a function, activity or task -- ability to broadcast communication to IIS users viewable upon logging into the system
Manage Orgs	83	Manage Organizations and Facilities	Management of organizations and facility accounts.	Organization/Facility Add, Edit, Inactivate VFC/Vaccine Program Organization/Facility User Search Add, Edit, Inactivate User Authentication and Password Management	-- ability to look up and retrieve an organization or facility account -- ability to add, edit or inactivate an organization or facility; ability for an organization to initiate enrollment and re-enrollment in the IIS -- ability to enroll and re-enroll a provider organization in VFC and/or other vaccine program(s) -- ability to communicate with organization/facility representatives -- ability to define parameters to look up and retrieve a user account -- ability to add, edit or inactivate a user account -- ability to validate a user's identity, entity and system permissions -- ability to administer, change and reset user passwords
Manage Users	35	Manage Users	Management of user accounts.	Onboarding Interfaces Data Exchange	-- ability to establish/re-establish/modify an interface with another information system for the electronic exchange of demographic and/or immunization data -- ability to facilitate electronic data exchange with other information systems, including EHRs, VTrcks, jurisdictional vital records, and the IZ Gateway -- ability to exchange data electronically and monitor and troubleshoot data exchange
Interop	65	Support Interoperability	Manage interfaces to exchange data between the IIS and other systems.	Patient Matching and Vaccination Event Matching Clinical Decision Support Reminder/Recall Coverage Reports	-- ability to identify and manage duplicate and potential duplicate patient records -- ability to identify and manage duplicate and potential duplicate vaccination entries -- ability to evaluate and forecast immunizations for a patient per ACIP guidelines and in alignment with CDSI specifications -- ability to identify and notify patients who are due for upcoming immunizations (reminder) and/or are past due (recall) -- ability to create reports to support immunization coverage assessment at the provider and geographic levels including reports for the CDC's VFC provider-level immunization quality improvement program (IQIP)
Data Quality	32	Ensure Data Quality	Deduplication and consolidation of records.	Patient Search Add, Edit Patient Patient Status Patient Consent Add, Edit Patient Print/Export Report Mass Vaccination	-- ability to look up and retrieve a patient record -- ability to add, edit or inactivate a patient record -- ability to manage the assignment of a specific patient to a provider organization or jurisdiction -- ability to manage patient agreement to participate in the IIS in accordance with jurisdictional policy -- ability to add, edit an immunization record -- ability to print or export either a patient or immunization record -- ability to capture a large volume of demographic and immunization data in emergency situations
Eval Forecast	64	Evaluate and Forecast	Determine the validity of past immunizations administered as a basis for determining	Vaccine Inventory Search Add, Edit Vaccine Inventory Vaccine Ordering Review/Approve Order Vaccine Dose Decrementing Vaccine Inventory Vaccine Transfer Vaccine Wastage Vaccine Expiration Standard Reports Ad Hoc Queries and Print/Export Report Consumer Access	-- ability to look up and retrieve vaccine doses in inventory -- ability to manage vaccine inventory, including ordering, storing and handling, and reconciliation of vaccine doses -- ability to order publicly funded vaccines as authorized -- ability to review, edit, and authorize an organization's vaccine order for approval, submission and fulfillment -- ability to automatically decrement vaccine doses from inventory when matched vaccine doses are reported as administered -- ability to maintain an accurate count of vaccine doses available based on doses administered, wasted, transferred, and expired -- ability to transfer vaccine from one VFC provider organization to another in certain situations -- ability to manage nonviable vaccine reporting -- ability for notification and management of vaccine inventory expired and due to expire -- ability to generate pre-configured reports available and accessible in the IIS -- ability to create, save and schedule data queries and customized reports on demand -- ability to generate data to print or use in other systems -- ability for authorized consumers to directly access IIS data for which they are authorized
Manage Pt. & Record	83	Manage Patient and Immunization Records	Manage patient demographics and patient immunization record.		
Manage Vaccine Inv	67	Manage Vaccine Inventory	Order publicly-purchased vaccine and manage vaccine inventory.		
Data Access	65	Provide Data Access	Provision of access to data and information.		
Tab Name	# of Reqs	Attribute	Description	Sub-Characteristics	Description
Non-Functional	59	Performance	Performance efficiency relative to the amount of resources used under stated conditions.	Time behavior Resource utilization Capacity	-- degree to which the response and processing times and throughput rates of a product or system, when performing its functions, meet requirements -- degree to which the amounts and types of resources used by a product or system, when performing its functions, meet requirements -- degree to which the maximum limits of a product or system parameter meet requirements
		Usability	Degree to which a product or system can be used by specified users to achieve specified goals.	Operability User error protection	-- degree to which a product or system has attributes that make it easy to operate and control -- degree to which a system protects users against making errors
		Reliability	Degree to which a system, product or component performs specified functions under	Accessibility Availability Fault tolerance Recoverability	-- degree to which a product or system can be used by people with the widest range of characteristics and capabilities to achieve a specified goal in a specified context of use -- degree to which a system, product or component is operational and accessible when required for use -- degree to which a system, product or component operates as intended despite the presence of hardware or software faults -- degree to which, in the event of an interruption or a failure, a product or system can recover the data directly affected and re-establish the desired state of the system
		Security	Degree to which a product or system protects information and data so that persons or other products or systems have the	Confidentiality Non-repudiation Accountability Authenticity Analyzability Adaptability Installability	-- degree to which a product or system ensures that data are accessible only to those authorized to have access -- degree to which actions or events can be proven to have taken place so that the events or actions cannot be repudiated later -- degree to which the actions of an entity can be traced uniquely to the entity -- degree to which the identity of a subject or resource can be proved to be the one claimed -- degree of effectiveness and efficiency with which it is possible to assess the impact on a product or system of an intended change to one or more of its parts, or to diagnose a product for deficiencies or causes of failures, or to identify parts to be modified -- degree to which a product or system can effectively and efficiently be adapted for different or evolving hardware, software or other operational or usage environments -- degree of effectiveness and efficiency with which a product or system can be successfully installed and/or uninstalled in a specified environment
		Maintainability	Degree of effectiveness and efficiency with which a system,		
		Portability	Degree of effectiveness and efficiency with which a system,		

Status	Req. #*	Capability/Attribute	***Requirement: The IIS must/should have...	Comments	Reviewer notes	Priority: E, O (essential, optional)**	Vendor response: Yes, Yes with customization*, No *Comment required	Vendor comment(s) If Yes with customization: Indicate the anticipated cost and timeline for development and release.
Updated from the previous version of the RTM or newly added.	[Req. ID]	[Capability/attribute name, e.g., "System Configuration"]	[high-level requirement]	--Suggested recommendations for the requirement. --Indication of relationship to a priority cross-functional need such as mass vaccination or school reports.	[Reviewer notes related to: -- Organization of the requirement (in terms of its associated capability and/or function) -- Wording of the requirement -- Misc thoughts]	[Draft priority designation, e.g. "E"]		
Updated from the previous version of the RTM or newly added.	[Req. ID]	[Capability/attribute name, e.g., 'System Configuration']	[detailed requirement]	--Suggested recommendations for the requirement. --Indication of relationship to a priority cross-functional need such as mass vaccination or school reports.	[Reviewer notes related to: -- Organization of the requirement (in terms of its associated capability and/or function) -- Wording of the requirement -- Misc thoughts]	[Draft priority designation, e.g. "E"]		

*Numbering/identification of Individual requirements will occur at the very end of the review and revision process, once requirements are final.

**Priority designations:

E: Essential: Baseline, critical requirement reflective of core functionality/attribute for a viable IIS as defined by CDC.

O: Optional: Not essential for all IIS as defined by CDC.

*** Rows highlighted in blue indicate a high-level requirement

Capability	Requirement: The IIS must/should...	Priority: E, O (essential, optional)	Vendor response: Yes, Yes with customization*, No *Comment required	Vendor comment(s) If Yes with customization: Indicate the anticipated cost and timeline for development and release.
Hierarchy Configuration	ability to establish the IIS hierarchy to associate and manage relationships between entities	E	Yes	
Hierarchy Configuration	ability to associate user(s) to a facility	E	Yes	
Hierarchy Configuration	ability to associate clinician(s) to a facility	E	Yes	
Hierarchy Configuration	ability to associate facility/facilities to an organization	E	Yes	
Hierarchy Configuration	ability to establish geographic jurisdictional hierarchy	E	Yes	
Hierarchy Configuration	ability to aggregate data across user-defined hierarchies	E	Yes	
System Configuration	ability to maintain inventory availability in IIS visible to authorized users	E	Yes	
System Configuration	ability for jurisdictional admin to maintain separate VFC supplied inventory in the IIS	E	Yes	
System Configuration	ability for jurisdictional admin to maintain separate jurisdiction supplied inventory	E	Yes	
System Configuration	ability for jurisdictional admin to maintain separate private stock inventory	E	Yes	
System Configuration	ability for jurisdictional admin to manage code sets	E	Yes	
System Configuration	ability for jurisdictional admin to update NDC codes	E	Yes	
System Configuration	ability for jurisdictional admin to update CVX codes	E	Yes	
System Configuration	ability for jurisdictional admin to update MVX codes	E	Yes	
System Configuration	ability to configure default values to minimize data input	E	Yes	
System Configuration	ability to display an error message in the user interface when minimum information required is not complete	E	Yes	
System Configuration	ability to standardize addresses per US Postal conventions and codes	E	Yes	
System Configuration	ability to verify validity of addresses (as valid USPS addresses) in the IIS through electronic means (e.g., SmartyStreets)	E	Yes	
System Configuration	ability to geocode addresses	E	Yes	
System Configuration	ability to validate accurate assignment of address to an individual through electronic means (e.g., LexisNexis)	O	Yes	
System Configuration	ability for jurisdictional admin to modify facility types according to immunization program descriptions and CDC VFC Program descriptions	E	Yes	
System Configuration	ability for jurisdictional admin to configure rules governing data validation of incoming HL7 messages	E	Yes	
System Configuration	ability to configure an authorization agreement as per jurisdictional policy	O	Yes	
System Configuration	ability to configure a user agreement as per jurisdictional policy	O	Yes	
System Configuration	ability to display age in year/month/day format in all age display fields (e.g., 2 years, 4 months, 3 days)	E	Yes	
System Configuration	ability to provide optional calendar to select a date in a web client	O	Yes	
System Configuration	ability to add patient priority group indicators	E	Yes	
System Configuration	ability to modify patient priority group indicators	E	Yes	
System Configuration	ability for jurisdictional admin to manage business rules related to data quality	E	Yes	
System Configuration	ability for jurisdictional admin to specify business rules for monitoring data quality	E	Yes	
System Configuration	ability for jurisdictional admin to modify business rules for monitoring data quality	E	Yes	
System Configuration	ability to configure the organization enrollment form	E	Yes	
System Configuration	support rules-based logic to suggest approval or rejection of enrollment form based on review of completed fields	E	Yes	
System Configuration	ability to manage rules-based logic for approval or rejection of enrollment form	E	Yes	
System Configuration	ability for jurisdictional admin to create enrollment forms based on program requirements	E	Yes	
System Configuration	ability for jurisdictional admin to modify an enrollment form	E	Yes	
System Configuration	ability to auto-populate existing user information in the IIS with the information on the enrollment form when creating a new facility in the IIS	O	Yes	
System Configuration	ability to auto-populate the organization information in the IIS with information on the enrollment form when creating a new organization in the IIS	O	Yes	
System Configuration	ability for jurisdictional admin to configure vaccine forecasting business rules	E	Yes	
System Configuration	ability to apply effective dates to vaccine rules	O	Yes	
System Configuration	ability to incorporate new vaccines per ACIP into the forecasting algorithm	E	Yes	
System Configuration	ability to support a record search algorithm to return "best matches"	E	Yes	
System Configuration	ability for jurisdictional admin to configure the number of search results to be displayed per jurisdictional policy	E	Yes	
System Configuration	ability for jurisdictional admin to modify required parameters for patient searches	E	Yes	
System Configuration	ability to restrict certain data from being included in reports such as sensitive demographic information e.g., address, phone number, mother's maiden name, Medicaid ID	E	Yes	
System Configuration	ability to open multiple screens simultaneously within the application	O	Yes	
User Roles and Permissions	ability for jurisdictional admin to manage user roles and permissions by task per jurisdictional policy	E	Yes	
User Roles and Permissions	ability for jurisdictional admin to add user roles with distinct permissions	E	Yes	
User Roles and Permissions	ability for jurisdictional admin to modify user roles with distinct permissions	E	Yes	
User Roles and Permissions	ability for jurisdictional admin to deactivate user roles	E	Yes	
User Roles and Permissions	ability for jurisdictional admin to modify permissions to IIS processes and data for specific user roles	E	Yes	
User Roles and Permissions	ability for jurisdictional admin to restrict system functionality by user role	E	Yes	
User Roles and Permissions	ability for jurisdictional admin to restrict authorized user access to data based on user role	E	Yes	
User Roles and Permissions	ability for jurisdictional admin to enable access to standard reports based on user role	E	Yes	
User Roles and Permissions	ability to automatically update all users assigned to a role based on changes made to the "master" role attributes	E	Yes	
System Alerts	ability for jurisdictional admin to manage system alerts	E	Yes	
System Alerts	ability to view global messages upon logging into the application	E	Yes	
System Alerts	ability for jurisdictional admin to add system alerts for specific IIS users to view when logging into application	O	Yes	
System Alerts	ability for jurisdictional admin to add global messages	E	Yes	
System Alerts	ability for jurisdictional admin to edit global messages	E	Yes	

Capability		Requirement: The IIS must/should...	Priority: E, O (essential, optional)	Vendor response: Yes, Yes with customization*. No * Comment required	Vendor comment(s) If Yes with customization: Indicate the anticipated cost and timeline for development and release.
System Alerts	ability for jurisdictional admin to inactivate global messages		E	Yes	

Capability	Requirement: The IIS must/should have...	Priority: E, O (essential, optional)	Vendor response: Yes, Yes with customization*, No *Comment required	Vendor comment(s) If Yes with customization: indicate the anticipated cost and timeline for development and release.
Organization/Facility	ability to search organization/facility information stored in the IIS	E	Yes	
Organization/Facility	ability for jurisdictional admin to search organizations/facilities by user-defined parameters	E	Yes	
Organization/Facility	ability to clear and re-enter search criteria when searching for an organization/facility	E	Yes	
Add, Edit, Inactivate	ability for applicant from unauthorized (non-participating/enrolled) organization to enroll electronically for participation in the IIS	E	Yes	
Add, Edit, Inactivate	ability for applicant from unauthorized organization to add IIS enrollment information online	E	Yes	
Add, Edit, Inactivate	ability for applicant from unauthorized org to submit IIS enrollment information online	E	Yes	
Add, Edit, Inactivate	ability for applicant from unauthorized org to save partially complete IIS enrollment information	O	Yes	
Add, Edit, Inactivate	ability for applicant from unauthorized org to return to a partially complete IIS enrollment information	O	Yes	
Add, Edit, Inactivate	ability to prevent submission of incomplete IIS enrollment information when required field(s) are missing	E	Yes	
Add, Edit, Inactivate	ability to electronically notify the applicant of incomplete IIS enrollment information specifying the missing required fields	E	Yes	
Add, Edit, Inactivate	ability to electronically notify applicant that IIS enrollment information has been submitted	E	Yes	
Add, Edit, Inactivate	ability for applicant from unauthorized org to edit rejected IIS enrollment information	E	Yes	
Add, Edit, Inactivate	ability for applicant from unauthorized org to resubmit a rejected IIS enrollment	E	Yes	
Add, Edit, Inactivate	ability to capture electronic signature for enrollment, for an authorization agreement	O	Yes	
Add, Edit, Inactivate	ability for jurisdictional admin to manage organization/facility IIS enrollment	E	Yes	
Add, Edit, Inactivate	ability for jurisdictional admin to manage organization/facility IIS enrollment status	E	Yes	
Add, Edit, Inactivate	ability for jurisdictional admin to inactivate an organization	E	Yes	
Add, Edit, Inactivate	ability for jurisdictional admin to reactivate an organization	E	Yes	
Add, Edit, Inactivate	ability to store IIS enrollment status for an organization/facility	E	Yes	
Add, Edit, Inactivate	ability for jurisdictional admin to inactivate a facility	E	Yes	
Add, Edit, Inactivate	ability for jurisdictional admin to reactivate a facility	E	Yes	
Add, Edit, Inactivate	ability for jurisdictional admin to electronically approve IIS enrollment	E	Yes	
Add, Edit, Inactivate	ability to include reason for rejecting IIS enrollment of an organization	E	Yes	
Add, Edit, Inactivate	ability to electronically notify the organization that the submitted enrollment was rejected along with the reason	E	Yes	
Add, Edit, Inactivate	ability for jurisdictional admin to manage organization and facility records within the IIS	E	Yes	
Add, Edit, Inactivate	ability for jurisdictional admin to add an organization	E	Yes	
Add, Edit, Inactivate	ability for jurisdictional admin to modify an organization record	E	Yes	
Add, Edit, Inactivate	ability for jurisdictional admin to add a facility	E	Yes	
Add, Edit, Inactivate	ability for jurisdictional admin to modify a facility record	E	Yes	
Add, Edit, Inactivate	ability to automatically generate unique facility IIS ID	E	Yes	
Add, Edit, Inactivate	ability for jurisdictional admin to associate a facility to an organization	E	Yes	
Add, Edit, Inactivate	ability for jurisdictional admin to edit association between a facility an organization	E	Yes	
Add, Edit, Inactivate	ability to store multiple unique facility site IDs associated with a particular facility (to facilitate matching of facilities between the IIS and other data systems)	E	Yes	
Add, Edit, Inactivate	ability to capture a facility's mailing address	E	Yes	
Add, Edit, Inactivate	ability to capture a facility's shipping address	E	Yes	
Add, Edit, Inactivate	ability to enter contact information for the facility contact	E	Yes	
Add, Edit, Inactivate	ability to enter contact information for an optional contact	E	Yes	
Add, Edit, Inactivate	ability to indicate if an organization/facility is a site where immunizations are administered	E	Yes	
Add, Edit, Inactivate	ability to indicate if an organization/facility is a site where vaccines are stored for redistribution	O	Yes	
Add, Edit, Inactivate	ability to save documents (i.e., enrollment/onboarding documents, storage and handling, borrowing, temperature logs, wastage, etc.) to specific organization/facility file folder per policy	E	Yes	
Add, Edit, Inactivate	ability for jurisdictional admin to retrieve electronic files from provider file folder	E	Yes	
Add, Edit, Inactivate	ability for jurisdictional admin to record notes related to a organization/facility	E	Yes	
Add, Edit, Inactivate	ability to flag an organization as participating in VFC and/or other user-defined vaccine program(s)	E	Yes	
Add, Edit, Inactivate	ability to retrieve organization/facility information from scanned forms and automatically fill required data fields with retrieved information	O	Yes	
VFC/Vaccine Program	ability for an organization to submit vaccine program enrollment information electronically	E	Yes	
VFC/Vaccine Program	ability to capture electronic signature for vaccine program enrollment	E	Yes	
VFC/Vaccine Program	ability to access the vaccine program agreement in a separate window from the vaccine program enrollment	E	Yes	
VFC/Vaccine Program	ability to provide link to the blank formatted vaccine program enrollment form	E	Yes	
VFC/Vaccine Program	ability for the jurisdictional vaccine program admin to assign a VFC pin number to a newly enrolled VFC site	E	Yes	
VFC/Vaccine Program	ability to select the type of certified monitoring device being used to record temperatures	E	Yes	
VFC/Vaccine Program	ability for the jurisdictional vaccine program admin to document that a facility has a certificate of calibration for the temperature monitoring device	O	Yes	
VFC/Vaccine Program	ability for the jurisdictional vaccine program admin to approve a vaccine program enrollment	E	Yes	
VFC/Vaccine Program	ability for the jurisdictional vaccine program admin to enter an expiration date for a vaccine program enrollment	E	Yes	
VFC/Vaccine Program	ability for the jurisdictional vaccine program admin to document that the vaccine program facility has a routine and emergency vaccine management plan	E	Yes	
VFC/Vaccine Program	ability for the jurisdictional vaccine program admin to document that a facility participating in VFC has a VFC Coordinator annual training certificate	E	Yes	
VFC/Vaccine Program	ability for the jurisdictional vaccine program admin to document that a facility participating in VFC has a Backup Coordinator annual training certificate	E	Yes	
VFC/Vaccine Program	ability for the jurisdictional vaccine program admin to add comments during the vaccine program enrollment approval process	O	Yes	
VFC/Vaccine Program	ability to require the vaccine program facility to indicate the number of vaccine storage units being monitored	O	Yes	
VFC/Vaccine Program	ability to require the vaccine program facility to indicate the types of vaccine storage units being monitored	O	Yes	
VFC/Vaccine Program	ability to require the vaccine program facility to indicate whether they store Varicella and MMRV vaccine	E	Yes	
VFC/Vaccine Program	ability to enter contact information for the facility Primary Vaccine Coordinator	E	Yes	
VFC/Vaccine Program	ability to enter contact information for the facility Backup Vaccine Coordinator	E	Yes	
VFC/Vaccine Program	ability to enter contact information for the facility vaccine program Agreement Signatory	E	Yes	
VFC/Vaccine Program	ability to capture the day of the week that a vaccine program facility may receive vaccine shipments	E	Yes	
VFC/Vaccine Program	ability to capture the time that a vaccine program facility may receive vaccine shipments	E	Yes	
VFC/Vaccine Program	ability to automatically turn off vaccine ordering capabilities for a facility that does not have an up-to-date vaccine program enrollment	E	Yes	
VFC/Vaccine Program	ability to capture required information for VFC clinician: last name, first name, title, medical license number, NPI number, still active with facility, are they a signatory, specialty (FP, Peds) during the enrollment process	E	Yes	
VFC/Vaccine Program	ability to attach VFC documentation (in multiple formats) such as: VFC training certification, certificate of calibration, medical license, floor design diagram and other documents	E	Yes	
VFC/Vaccine Program	ability for IIS staff to retrieve electronic files from organization/facility file folder	O	Yes	
VFC/Vaccine Program	ability to automatically validate clinician license number against Professional Licensing Agency record database	O	Yes	

Capability		Requirement: The IIS must/should have...	Priority: E, O (essential, optional)	Vendor response: Yes, Yes with customization*, No * Comment required	Vendor comment(s) If Yes with customization: Indicate the anticipated cost and timeline for development and release.
VFC/Vaccine Program	ability to submit vaccine program re-enrollment data electronically		E	Yes	
VFC/Vaccine Program	ability to electronically notify a facility VFC/vaccine program coordinator of an upcoming need for VFC/vaccine program re-enrollment		O	Yes	
VFC/Vaccine Program	ability for the jurisdictional vaccine program admin to modify the date for online renewal electronic notifications for each vaccine program facility		E	Yes	
VFC/Vaccine Program	ability to suspend ordering capabilities for a facility pending approval of vaccine program enrollment		E	Yes	
VFC/Vaccine Program	ability to re-activate ordering capabilities for a facility when a vaccine program enrollment is approved		E	Yes	
Organization/Facility	ability to send electronic communications to organization/facility contacts		E	Yes	
Organization/Facility	ability to send a final electronic notification reminder, re: renewal, to all VFC facilities that have not completed the renewal by their expiration date		E	Yes	
Organization/Facility	ability to send electronic communications directly from the IIS		O	Yes	
Organization/Facility	ability to send electronic communications directly from the IIS to multiple recipients		O	Yes	
Organization/Facility	ability to notify more than one user at a participating vaccine program facility of any vaccine program notification		O	Yes	
Organization/Facility	ability for the jurisdictional vaccine program admin to customize vaccine program enrollment alerts to participating vaccine program facilities when needed		O	Yes	
Organization/Facility	ability for the jurisdictional vaccine program admin to modify the date for online renewal electronic notifications for each participating vaccine program facility		O	Yes	
Organization/Facility	ability to electronically notify the jurisdictional vaccine program admin of vaccine program follow-up activities for a new vaccine program facility enrolled for 6 months		O	Yes	

Capability	Requirement: The IIS must/should have...	Priority: E, O (essential, optional)	Vendor response: Yes, Yes with customization*, No *Comment required	Vendor comment(s) If Yes with customization: Indicate the anticipated cost and timeline for development and release.
User Search	ability for jurisdictional admin to search for user accounts by user-defined criteria	E	Yes	
User Search	ability for jurisdictional admin to view all user accounts	E	Yes	
User Search	ability for organization admin to search all user accounts associated with their organization	E	Yes	
User Search	ability for organization admin to view all user accounts associated with their organization	E	Yes	
User Search	ability to sort users by user defined-criteria	O	Yes	
Add, Edit, Inactivate User	ability for admin to manage user accounts	E	Yes	
Add, Edit, Inactivate User	ability to track the progress of a new user registration	O	Yes	
Add, Edit, Inactivate User	ability for admin to add new users	E	Yes	
Add, Edit, Inactivate User	ability for admin to modify user accounts	E	Yes	
Add, Edit, Inactivate User	ability for admin to inactivate user accounts	E	Yes	
Add, Edit, Inactivate User	ability for jurisdictional admin to inactivate multiple accounts in one transaction	O	Yes	
Add, Edit, Inactivate User	ability for organization admin to inactivate user accounts associated with their organization	E	Yes	
Add, Edit, Inactivate User	ability to store reason for inactivation of user account	E	Yes	
Add, Edit, Inactivate User	ability for jurisdictional admin to reactivate an Inactivated account	E	Yes	
Add, Edit, Inactivate User	ability to electronically notify a user that their account is locked (Inaccessible) as per jurisdictional security policy	O	Yes	
Add, Edit, Inactivate User	ability to electronically notify a user that their account is inactive	O	Yes	
Add, Edit, Inactivate User	capture clinician activity status (out of state, loss of certification, change of practice status, other)	O	Yes	
Add, Edit, Inactivate User	ability for jurisdictional admin to assign a role to authorized users	E	Yes	
Add, Edit, Inactivate User	ability for organization admin to assign a role to authorized users within their organization	E	Yes	
Authentication & Authorization	ability to authenticate user	E	Yes	
Authentication & Authorization	ability to access the system through an authorized username and password	E	Yes	
Authentication & Authorization	ability to support access via single-sign in for jurisdictional users	O	Yes	
Authentication & Authorization	ability to switch between multiple organizations	O	Yes	
Authentication & Authorization	ability to view jurisdictional policy agreements	E	Yes	
Authentication & Authorization	support multi-factor authentication per jurisdictional policy	O	Yes	
Password Management	ability to generate electronic notification to authorized user of account credentials	E	Yes	
Password Management	ability to electronically notify authorized users of their username	E	Yes	
Password Management	ability to electronically notify authorized users of their temporary password in a separate notification	E	Yes	
Password Management	ability to generate electronic notification at periodic intervals to authorized users of their pending account password expiration	E	Yes	
Password Management	ability for jurisdictional admin to configure the periodic intervals for generation of notifications to authorized users of their pending account password expiration	O	Yes	
Password Management	ability to support temporary password which will be required to change during initial log in	E	Yes	
Password Management	ability to support temporary password which will expire in X number of days determined by policy	E	Yes	
Password Management	ability for users to change their own passwords per program/jurisdiction security policy	E	Yes	
Password Management	ability for users to reset their password per program/jurisdiction security policy	E	Yes	
Password Management	ability to prompt users to change their password at time intervals per program/jurisdiction security policy	E	Yes	

Function: Support Interoperability

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Capability	Requirement: The IIS must/should have...	Priority: E, O (essential, optional)	Vendor response: Yes, Yes with customization*, No *Comment required	Vendor comment(s) If Yes with customization: Indicate the anticipated cost and timeline for development and release.
Onboarding	ability to onboard organizations/facilities to facilitate electronic data exchange	E	Yes	
Onboarding	ability to track an organization's/facility's progress through the onboarding process	O	Yes	
Onboarding	ability to capture EHR system specification details	E	Yes	
Onboarding	ability to create a unique username to assign to the organizations/facilities during the test phase	E	Yes	
Onboarding	ability to create a unique password to assign to the organizations/facilities during the test phase	E	Yes	
Onboarding	ability to electronically alert the vendor/organization when the certificate for transport is going to expire in X time period	E	Yes	
Onboarding	ability to store digital certificate information	E	Yes	
Onboarding	ability to validate that the transport layer between the test site and IIS is functional	E	Yes	
Onboarding	ability to validate system connectivity prior to the submission of test data	E	Yes	
Onboarding	ability to identify data formatting errors during testing	E	Yes	
Onboarding	ability to provide test message submission summary report to the EHR vendor	E	Yes	
Onboarding	ability for EHR vendor to view details regarding the processing of test data in terms of errors and warnings in the messages	E	Yes	
Onboarding	ability for IIS authorized staff to review and approve onboarding forms	E	Yes	
Onboarding	ability for IIS staff to review and reject onboarding forms	E	Yes	
Onboarding	ability for applicant to edit a rejected onboarding application	E	Yes	
Onboarding	ability for applicant to save a rejected onboarding application	E	Yes	
Onboarding	ability for applicant to resubmit a rejected onboarding application	E	Yes	
Onboarding	ability to compare onboarding application information to current records to determine most current data	E	Yes	
Interfaces	ability to interface with other systems to facilitate electronic data sharing/exchange per jurisdictional policy	E	Yes	
Interfaces	ability to interface with electronic health record systems	E	Yes	
Interfaces	ability to interface with the Immunization Gateway	E	Yes	
Interfaces	ability to interface with an application that facilitates patient scheduling	E	Yes	
Interfaces	ability to exchange data with CDC Vaccine Tracking System (VTrckS) based on most current CDC ExIS Specifications	E	Yes	
Interfaces	ability to order vaccine via electronic interface with VTrckS	E	Yes	
Interfaces	ability to receive vaccine inventory/shipping information	E	Yes	
Interfaces	ability to batch export vaccine inventory for submission to VTrckS	E	Yes	
Interfaces	ability to batch export vaccine ordering information for submission to VTrckS	E	Yes	
Interfaces	ability to batch export facility information	E	Yes	
Interfaces	ability to export vaccine return and wastage data to VTrckS	E	Yes	
Interfaces	ability to use the VTrckS-API for file exchange between the IIS and VTrckS based on CDC requirements and API file specifications	O	Yes	
Interfaces	ability to receive data through an interface with jurisdictional vital records system	E	Yes	
Interfaces	ability to update IIS data from Vital Records for birth events	E	Yes	
Interfaces	ability to update IIS data from Vital Records for death events	E	Yes	
Interfaces	ability to update IIS data from Vital Records for adoption events	E	Yes	
Interfaces	ability to update IIS data from Vital Records for name change events	E	Yes	
Interfaces	ability to detect if a newborn record is a potential duplicate in the IIS	E	Yes	
Interfaces	ability to use new Vital Record data for matched records to update patient demographic data	E	Yes	
Interfaces	ability to update the IIS with date of death from Vital Records data	E	Yes	
Interfaces	ability to prevent updates to IIS records	O	Yes	
Data Exchange	ability to support real-time data exchange per the CDC HL7 Implementation guide	E	Yes	
Data Exchange	ability to process an HL7 message	E	Yes	
Data Exchange	ability to respond to an HL7 message	E	Yes	
Data Exchange	ability to create an HL7 message	E	Yes	
Data Exchange	ability to capture IIS Core Data Elements	E	Yes	
Data Exchange	ability to store IIS Core Data Elements	E	Yes	
Data Exchange	ability to accept last prior version of HL7 messages	E	Yes	
Data Exchange	ability to manually correct a submitted record and resubmit for processing	O	Yes	
Data Exchange	ability to support data exchange in non-HL7 format	E	Yes	
Data Exchange	ability to import bulk patient demographic information into IIS	E	Yes	
Data Exchange	ability to import bulk immunization information into IIS	E	Yes	
Data Exchange	ability to export routine, seasonal, and emergency vaccination files (aggregate and de-identified)	E	Yes	

Function: Support Interoperability

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Capability	Requirement: The IIS must/should have...	Priority: E, O (essential, optional)	Vendor response: Yes, Yes with customization *, No *Comment required	Vendor comment(s) If Yes with customization: Indicate the anticipated cost and timeline for development and release.
Data Exchange	ability to export routine, seasonal, and emergency vaccination files (aggregate and de-identified) automatically via CDC approved	O	Yes	
Data Exchange	ability to monitor and troubleshoot data exchange	E	Yes	
Data Exchange	ability to view VXU messages submitted by an organization	E	Yes	
Data Exchange	ability to view HL7 messages for an organization within a defined date range per jurisdictional policy	E	Yes	
Data Exchange	ability to view HL7 ACK messages generated for an organization	E	Yes	
Data Exchange	ability to view incoming HL7 QBP messages submitted by an organization	E	Yes	
Data Exchange	ability to view RSP messages generated for an organization	E	Yes	
Data Exchange	ability to log acknowledgement messages indicating warnings and errors	E	Yes	
Data Exchange	ability to retrieve error messages within a specified date range by organization	E	Yes	
Data Exchange	ability to retrieve acknowledgment messages within a specified date range by organization	E	Yes	
Data Exchange	ability to filter error messages	E	Yes	
Data Exchange	ability to filter acknowledgement messages	E	Yes	
Data Exchange	ability to sort error messages	E	Yes	
Data Exchange	ability to sort acknowledgement messages	E	Yes	

Capability	Requirement: The IIS must/should have...	Priority: E, O (essential, optional)	Vendor response: Yes, Yes with customization*, No *Comment required	Vendor comment(s) If Yes with customization: Indicate the anticipated cost and timeline for development and release.
Patient Matching &	ability to prevent duplicate patient records in the IIS database	E	Yes	
Patient Matching &	ability to automatically identify incoming patient records as potential duplicates	E	Yes	
Patient Matching &	ability to automatically identify existing patient records as potential duplicates	E	Yes	
Patient Matching &	ability to automatically consolidate two or more duplicate records	E	Yes	
Patient Matching &	ability to generate electronic notification of potential duplicates for manual review	E	Yes	
Patient Matching &	ability to automatically match an incoming patient record with existing records to avoid a duplicate record being created	E	Yes	
Patient Matching &	ability to set thresholds for patient matching	E	Yes	
Patient Matching &	ability to view all potential duplicate patient records for an individual patient simultaneously	E	Yes	
Patient Matching &	ability for jurisdictional admin to edit thresholds to increase the probability of a match	E	Yes	
Patient Matching &	ability for jurisdictional admin to edit thresholds to reduce the probability of a match	E	Yes	
Patient Matching &	ability to flag potential duplicate patient records for manual review that cannot be resolved automatically	E	Yes	
Patient Matching &	ability to view all potential duplicate patient records simultaneously	E	Yes	
Patient Matching &	ability for admin to manually merge patient records	E	Yes	
Patient Matching &	ability for organizational/facility user to manually merge patient records from their own organization/facility	E	Yes	
Patient Matching &	ability to manually flag two or more patient records as potential duplicates	E	Yes	
Patient Matching &	ability to prevent manual review of records previously indicated as "not a duplicate"	E	Yes	
Patient Matching &	ability to flag a patient as "not a duplicate" during manual review	E	Yes	
Patient Matching &	ability to maintain "not a duplicate" flag for resolved patient records	E	Yes	
Patient Matching &	ability to select data elements from the patient records to maintain within the consolidated record	E	Yes	
Patient Matching &	ability to retain "pre-merged" records for reference	E	Yes	
Patient Matching &	ability to separate patient records that were incorrectly merged	E	Yes	
Vaccination Event	ability to prevent potential duplicate vaccination events at the immunization level	E	Yes	
Vaccination Event	ability to automatically identify incoming vaccination event as potential duplicates	E	Yes	
Vaccination Event	ability to automatically select the most accurate vaccination event based on deduplication rules	E	Yes	
Vaccination Event	ability to automatically identify existing vaccination events as potential duplicates	E	Yes	
Vaccination Event	ability to manually flag potential duplicate vaccination events for manual review	E	Yes	
Vaccination Event	ability to display potential duplicate vaccine records for an individual patient	E	Yes	
Vaccination Event	ability to manually merge a duplicate vaccination event	E	Yes	
Vaccination Event	ability to manually delete a duplicate vaccination event	E	Yes	
Vaccination Event	ability to automatically consolidate two or more duplicate vaccination events	E	Yes	
Vaccination Event	ability to retain "pre-merged" or "pre-consolidated" vaccination events for reference	E	Yes	
Vaccination Event	ability to separate vaccination events that were incorrectly merged or consolidated	E	Yes	

Capability	Requirement: The IIS must/should have...	Priority: E, O (essential, optional)	Vendor response: Yes, Yes with customization*, No *Comment required	Vendor comment(s) If Yes with customization: Indicate the anticipated cost and timeline for development and release.
Clinical Decision Support	ability to provide immunization clinical decision support according to ACIP recommendations	E	Yes	
Clinical Decision Support	ability to support a vaccine clinical decision support algorithm aligned with the CDC CDSi logic specifications	E	Yes	
Clinical Decision Support	ability for jurisdictional admin to update the CDS rules	E	Yes	
Clinical Decision Support	ability to evaluate a patient's' immunization history according to the ACIP Child and Adolescent	E	Yes	
Clinical Decision Support	ability to evaluate a patient's' immunization history according to the ACIP Recommended Catch-up	E	Yes	
Clinical Decision Support	ability to evaluate a patient's' immunization history according to the ACIP Adult Immunization Schedule	E	Yes	
Clinical Decision Support	ability to generate a vaccine forecast according to the ACIP Child and Adolescent Immunization Schedule and	E	Yes	
Clinical Decision Support	ability to generate a vaccine forecast according to the ACIP Recommended Catch-up Immunization Schedule	E	Yes	
Clinical Decision Support	ability to generate a vaccine forecast according to the ACIP Adult Immunization Schedule and a patient's	E	Yes	
Clinical Decision Support	ability to display and highlight vaccines that are due	E	Yes	
Clinical Decision Support	ability to display and highlight vaccines that are overdue	E	Yes	
Clinical Decision Support	ability to display an indication when a vaccine series is complete	E	Yes	
Clinical Decision Support	ability to display vaccine-specific contraindications according to CDC lists of vaccine contraindications	O	Yes	
Clinical Decision Support	ability to take into account contraindications and precautions in the vaccine forecast	E	Yes	
Clinical Decision Support	ability to take into account evidence of immunity in the vaccine forecast	E	Yes	
Clinical Decision Support	ability to generate a forecast of specific vaccines required for individuals who travel outside the US	O	Yes	
Clinical Decision Support	ability to maintain historical records of effective dates of previous forecast schedules	O	Yes	
Clinical Decision Support	ability to review an immunization schedule that was appropriate at the time of administration	O	Yes	
Clinical Decision Support	ability to apply an immunization schedule that was appropriate at the time of administration	O	Yes	
Clinical Decision Support	ability to account for immune globulins in vaccine forecasting	E	Yes	
Clinical Decision Support	ability to create test cases for reuse during user acceptance testing	E	Yes	
Clinical Decision Support	ability to save test cases for reuse during user acceptance testing	E	Yes	
Clinical Decision Support	ability to compare the expected results of the forecasting test case to the actual results observed by the	E	Yes	
Reminder/Recall	ability to generate patient-specific reminder/recall notifications	E	Yes	
Reminder/Recall	ability to select one or more vaccines for generating reminder/recall notifications	E	Yes	
Reminder/Recall	ability to view the date the reminder/recall notice was sent to a patient	O	Yes	
Reminder/Recall	ability to generate lists of patients in need of a reminder or recall notification by organization	E	Yes	
Reminder/Recall	ability to generate reminder/recall notifications per consent designation	E	Yes	
Reminder/Recall	ability to generate patient-specific reminder/recall notices by user-defined parameters	E	Yes	
Reminder/Recall	ability to generate reminder/recall in user-defined format	E	Yes	
Reminder/Recall	ability to select the age of the cohort when generating reminder/recall notifications	E	Yes	
Reminder/Recall	ability to print patient-specific reminder/recall notices by user-defined parameters	E	Yes	
Reminder/Recall	ability to generate patient specific reminder/recalls in a user-defined format	E	Yes	
Reminder/Recall	ability for an end user to generate patient specific reminder/recalls in accordance with HIPAA and	E	Yes	
Reminder/Recall	ability for an end user to print patient specific reminder/recalls in accordance with HIPAA and jurisdictional	E	Yes	
Reminder/Recall	ability to generate vaccine recall notices by facility based on vaccine name, vaccination date range, and lot	O	Yes	
Reminder/Recall	ability to generate vaccine recall notices by administering provider based on vaccine name, vaccination date	O	Yes	
Reminder/Recall	ability to set the limit/number of times a patient will receive a reminder/recall	O	Yes	
Reminder/Recall	ability to modify the limit/number of times a patient will receive a reminder/recall	O	Yes	
Reminder/Recall	ability to exclude a patient who has met the limit/number of times to receive a reminder/recall	O	Yes	
Reminder/Recall	ability to generate a list of phone numbers for patients needing reminder/recall	O	Yes	
Reminder/Recall	ability to manually review a patient list for a reminder/recall notification	E	Yes	
Reminder/Recall	ability to flag patients to exclude before sending a reminder/recall notification	O	Yes	
Reminder/Recall	ability to establish a time interval between reminder recall notices (e.g., 90 days or 60 days)	O	Yes	
Reminder/Recall	ability to generate a reminder/recall notifications for patients with an active status for their organization	E	Yes	
Reminder/Recall	ability to generate reports that include reminder/recall history for specific date range	O	Yes	

Capability	Requirement: The IIS must/should have...	Priority: E, O (essential, optional)	Vendor response: Yes, Yes with customization*, No *Comment required	Vendor comment(s) If Yes with customization: Indicate the anticipated cost and timeline for development and release.
Reminder/Recall	ability to make all reminder/recall data accessible to authorized users for a predetermined period of time	O	Yes	
Reminder/Recall	ability to aggregate multiple notices going to the same address into one notification	O	Yes	
Coverage Reports	ability to generate report(s) displaying information on immunization coverage rate(s) among select	E	Yes	
Coverage Reports	ability to generate report(s) for organizations and facilities per CDC Immunization Quality Improvement for	E	Yes	
Coverage Reports	ability to generate report(s) on immunization coverage for a user-defined geographic area	E	Yes	
Coverage Reports	ability to generate report(s) on immunization coverage for a patient cohort	E	Yes	
Coverage Reports	ability to view and modify list of patients to be included in immunization coverage report	O	Yes	
Coverage Reports	ability to generate report(s) displaying immunization coverage trends over time, over a selected timeframe	E	Yes	
Coverage Reports	ability to generate report(s) that display the number of missed opportunities for vaccination	E	Yes	
Coverage Reports	ability to generate report(s) displaying the number of patients late up-to-date for immunization who are up-	E	Yes	
Coverage Reports	ability to generate report(s) that display the number of invalid vaccine doses	E	Yes	
Coverage Reports	ability to generate report(s) displaying vaccine exemption rates	E	Yes	
Coverage Reports	ability to generate report(s) displaying immunization coverage by user-defined parameters	E	Yes	
Coverage Reports	ability to generate report(s) displaying immunization coverage by vaccine type	E	Yes	
Coverage Reports	ability to generate report(s) displaying immunization coverage by age range	E	Yes	
Coverage Reports	ability to generate report(s) displaying immunization coverage by ethnicity	E	Yes	
Coverage Reports	ability to generate report(s) displaying immunization coverage by race	E	Yes	
Coverage Reports	ability to generate report(s) displaying immunization coverage by patient sex	O	Yes	

Capability	Requirement: The IIS must/should have...	Priority: E, O (essential, optional)	Vendor response: Yes, Yes with customization*, No *Comment required	Vendor comment(s) If Yes with customization: Indicate the anticipated cost and timeline for development and release.
Patient Search	ability to search for patient records	E	Yes	
Patient Search	ability to search patient record based on one or multiple user-defined parameters	E	Yes	
Patient Search	ability to re-search for a patient record by modifying existing search parameters	E	Yes	
Patient Search	ability to display the list of returned possible patient matches per jurisdictional policy	E	Yes	
Patient Search	ability to select a patient record from the list of possible patient matches	E	Yes	
Add, Edit Patient	ability to add demographic information to a patient record	E	Yes	
Add, Edit Patient	ability to create a new patient record	E	Yes	
Add, Edit Patient	ability to edit demographic information in a patient record	E	Yes	
Add, Edit Patient	ability to insert permanent comments in a patient's record that can be viewed based on	E	Yes	
Add, Edit Patient	ability to display the user who created the permanent comment in a patient's record	E	Yes	
Add, Edit Patient	ability to prevent a patient record from being saved unless required fields are completed, per	E	Yes	
Add, Edit Patient	ability to automatically notify a user when attempting to submit an incomplete patient record	E	Yes	
Add, Edit Patient	ability to store CDC-endorsed core data elements for all patient records	E	Yes	
Add, Edit Patient	ability to store multiple of reported names for each patient to include: first name, middle name, last	E	Yes	
Add, Edit Patient	ability to store multiple patient addresses	O	Yes	
Add, Edit Patient	ability to support multiple patient address type designations (e.g. primary address, vacation address)	O	Yes	
Add, Edit Patient	ability to identify effective dates for use of a patient address	O	Yes	
Add, Edit Patient	ability to store all historic addresses for a patient	O	Yes	
Add, Edit Patient	ability to store country information related to where the patient was born	O	Yes	
demographics	SmartyStreets)	O	Yes	
Add, edit patient	SmartyStreets)	O	Yes	
Add, Edit Patient	ability to automatically create a unique patient ID number	E	Yes	
Add, Edit Patient	ability to automatically associate patient ID number to the patient's record	E	Yes	
Add, Edit Patient	ability to track patients of all ages per jurisdictional law or policy	E	Yes	
Add, Edit Patient	ability to store mother's HBsAg status for a patient	O	Yes	
Add, Edit Patient	ability to store a patient's occupation	E	Yes	
Add, Edit Patient	ability to designate patient as belonging to a <u>priority group</u> for vaccination	O	Yes	
Add, Edit Patient	ability to store multiple patient identifiers	E	Yes	
Add, Edit Patient	ability to assign patient records to a cohort	E	Yes	
Add, Edit Patient	ability to assign patient records to multiple cohorts	E	Yes	
Add, Edit Patient	ability to view patient records by cohort	E	Yes	
Add, Edit Patient	ability to remove patient records from a cohort	E	Yes	
Patient Status	ability to manage patient status at the organization/facility level	E	Yes	
Patient Status	ability to store active patient status at the organization/facility level	E	Yes	
Patient Status	ability to store inactive patient status at the organization/facility level	E	Yes	
Patient Status	ability to edit active patient status at the organization/facility level	E	Yes	
Patient Status	ability to edit inactive patient status at the organization/facility level	E	Yes	
Patient Status	ability to store reason for inactive status of patients at the organizational/facility level	E	Yes	
Patient Status	ability to edit multiple patients status in one action	O	Yes	
Patient Status	ability to manage patient status at the geographic jurisdictional level	E	Yes	
Patient Status	ability to store active patient status at the geographic jurisdiction level	E	Yes	
Patient Status	ability to store inactive patient status at the geographic jurisdictional level	E	Yes	
Patient Status	ability to edit active patient status at the geographic jurisdictional level	E	Yes	
Patient Status	ability to edit inactive patient status at the geographic jurisdictional level	E	Yes	
Patient Status	ability to store reason for inactive status of patients at the geographic jurisdictional level	O	Yes	

Function: Manage Patient and Immunization Records

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Capability	Requirement: The IIS must/should have...	Priority: E, O (essential, optional)	Vendor response: Yes, Yes with customization *, No *Comment required	Vendor comment(s) If Yes with customization: Indicate the anticipated cost and timeline for development and release.
Patient Status	ability to restrict access to patient records that have been placed in an inactive status	O	Yes	
Patient Status	ability to restrict edits to patient records that have been placed in an inactive status	O	Yes	
Patient Consent	ability to manage patient consent per jurisdictional policy	E	Yes	
Patient Consent	ability to update patient consent on a patient's record	E	Yes	
Patient Consent	ability to opt out a patient from participating in the IIS	E	Yes	
Patient Consent	ability to opt in a patient for participation in the IIS	E	Yes	
Patient Consent	ability to enable access to a patient record per consent designation	E	Yes	
Patient Consent	ability to enable updates to a patient record per consent designation	E	Yes	
Add, Edit Patient	ability to add vaccination event information to a patient record	E	Yes	
Add, Edit Patient	ability to edit vaccine information in a patient record	E	Yes	
Add, Edit Patient	ability to mark vaccine information in a patient record for deletion	O	Yes	
Add, Edit Patient	ability to add reason for deletion of vaccine information in a patient record	O	Yes	
Add, Edit Patient	ability to capture vaccine eligibility by vaccine dose for publicly purchased vaccine	E	Yes	
Add, Edit Patient	ability to store vaccine eligibility by vaccine dose for publicly purchased vaccine	E	Yes	
Add, Edit Patient	ability to report multiple doses administered to the same patient on the same administration date	E	Yes	
Add, Edit Patient	ability to store all CDC-endorsed core data elements related to vaccine events	E	Yes	
Add, Edit Patient	ability to enter vaccination substandard or otherwise compromised flag	E	Yes	
Add, Edit Patient	ability to view submitted vaccination event information on a patient's record	E	Yes	
Add, Edit Patient	ability to store adverse reactions in accordance with Vaccine Recommendations and Guidelines of	E	Yes	
Add, Edit Patient	ability to flag an adverse reaction as having been reported to VAERS	E	Yes	
Add, Edit Patient	ability to store patient vaccination event funding eligibility information	E	Yes	
Add, Edit Patient	ability to print form for signature of vaccine refusal by patient for each individual vaccine antigen	O	Yes	
Add, Edit Patient	ability to ensure that the default lot number is from the oldest lot when entering an administered	E	Yes	
Add, Edit Patient	ability to record administration of vaccination regardless if vaccine has since expired in inventory	E	Yes	
Add, Edit Patient	ability to track vaccinations that require adjuvant	E	Yes	
Print/Export Record	ability to securely print a patient Immunization record	E	Yes	
Print/Export Record	ability to include evaluated history in the printable version of the patient record	E	Yes	
Print/Export Record	ability to include the forecast in the printable version of the patient record	E	Yes	
Print/Export Record	ability to include immunity in the printable version of the patient record	E	Yes	
Print/Export Record	ability to securely export a patient immunization record	E	Yes	
Print/Export Record	ability to export a patient record in user-defined format	O	Yes	
Mass Vaccination	ability to support mass vaccination operations	E	Yes	
Mass Vaccination	ability to rapidly capture patient demographic information offline during mass vaccination clinic for	E	Yes	
Mass Vaccination	ability to rapidly capture vaccine information offline during mass vaccination clinic for later	E	Yes	
Mass Vaccination	ability to support rapid capture of patient demographic information during mass vaccination clinic	E	Yes	
Mass Vaccination	ability to support rapid capture of vaccine information during mass vaccination clinic	E	Yes	
Mass Vaccination	ability to administer vaccines during public health emergency without impacting the patient's status	O	Yes	
Mass Vaccination	ability for jurisdictional admin to flag/indicate org/facility participation in mass vaccination event	O	Yes	

Capability	Requirement: The IIS must/should have...	Priority: E, O (essential, optional)	Vendor response: Yes, Yes with customization*, No *Comment required	Vendor comment(s) If Yes with customization: Indicate the anticipated cost and timeline for development and release.
Vaccine Inventory	ability to search inventory by user-defined parameters	E	Yes	
Vaccine Inventory	ability to search the inventory by funding source	E	Yes	
Vaccine Inventory	ability to search inventory by vaccine type	E	Yes	
Vaccine Inventory	ability to search inventory by vaccine lot number	E	Yes	
Vaccine Inventory	ability to search inventory by vaccine NDC code	E	Yes	
Add, Edit Vaccine	ability to manage vaccine inventory	E	Yes	
Add, Edit Vaccine Inventory	ability to support visualization of current vaccine inventory	E	Yes	
Add, Edit Vaccine	ability to edit inventory funding source at the lot level	E	Yes	
Add, Edit Vaccine	ability to edit inventory funding source at the vaccine level	E	Yes	
Add, Edit Vaccine	ability to add vaccine information to inventory	E	Yes	
Add, Edit Vaccine	ability to support barcode scanning system to electronically upload vaccine inventory to the IIS	O	Yes	
Add, Edit Vaccine	ability to view current inventory list by facility	E	Yes	
Add, Edit Vaccine	ability to view current inventory list by organization	E	Yes	
Add, Edit Vaccine	ability for jurisdictional admin to edit organization/facility inventory	E	Yes	
Add, Edit Vaccine	ability to manage vaccine borrowed from lots belonging to one funding source to lots belonging to another funding source	O	Yes	
Add, Edit Vaccine	ability to reclassify funding source of borrowed vaccine from private to public or vice versa for replacement cases	O	Yes	
Add, Edit Vaccine	ability to view storage capability	E	Yes	
Add, Edit Vaccine	ability to document vaccine storage and handling events such as temperature excursions	E	Yes	
Add, Edit Vaccine	ability to store storage capability	E	Yes	
Vaccine Ordering	ability for rule based logic to recommend vaccine order quantity	E	Yes	
Vaccine Ordering	ability to alert user when "reorder recommendation" inventory level is reached	O	Yes	
Vaccine Ordering	ability to pre-populate order with recommended quantities based on inventory, doses reported as administered to IIS	E	Yes	
Vaccine Ordering	ability to edit pre-populated order quantity	E	Yes	
Vaccine Ordering	ability to order vaccines	E	Yes	
Vaccine Ordering	ability for jurisdictional admin to activate vaccines available for ordering	E	Yes	
Vaccine Ordering	ability for jurisdictional admin to inactivate vaccines available for ordering	E	Yes	
Vaccine Ordering	ability to order publicly-purchased vaccines	E	Yes	
Vaccine Ordering	ability to view all orders by user-defined parameters	O	Yes	
Vaccine Ordering	ability to update delivery hours to receive shipments	E	Yes	
Vaccine Ordering	ability to enter a reason for vaccine orders outside the recommended order quantity	E	Yes	
Vaccine Ordering	ability to search and view past vaccine orders by facility within a specified timeframe	E	Yes	
Vaccine Ordering	ability to verify contact information during each order without leaving ordering workflow	E	Yes	
Vaccine Ordering	ability to update contact information during each order without leaving ordering workflow	E	Yes	
Vaccine Ordering	ability to save an unsubmitted order	E	Yes	
Vaccine Ordering	ability to update organization/facility contact information before submitting a vaccine order	E	Yes	
Vaccine Ordering	ability to cancel unsubmitted or unprocessed vaccine orders	E	Yes	
Vaccine Ordering	ability to edit unsubmitted or unprocessed vaccine orders	E	Yes	
Vaccine Ordering	ability to save an unsubmitted order after rejection	E	Yes	
Vaccine Ordering	ability to verify order information before order submitted	E	Yes	
Vaccine Ordering	ability for jurisdictional admin to reject a vaccine order	E	Yes	
Vaccine Ordering	ability for jurisdictional admin to select a reason code when rejecting an order	E	Yes	
Vaccine Ordering	ability to edit an order after rejection	E	Yes	
Vaccine Ordering	ability to resubmit an order after rejection	E	Yes	
Vaccine Ordering	ability to electronically notify the facility of a rejected order	E	Yes	
Vaccine Ordering	ability to track the shipping status of orders	E	Yes	
Vaccine Ordering	ability to verify packing slip information after order is shipped	O	Yes	
Vaccine Ordering	ability to receive electronic notification when order quantity received does not match vaccine order	O	Yes	
Vaccine Ordering	ability to receive electronic notification when vaccine order received is damaged	O	Yes	
Vaccine Ordering	ability to request shipping label(s) for nonviable vaccine subject to return	O	Yes	
Vaccine Ordering	ability to search for past vaccine returns within a specified timeframe	E	Yes	
Vaccine Ordering	ability to view past vaccine returns within a specified time frame	E	Yes	
Vaccine Ordering	ability to pre-book vaccine orders	E	Yes	
Vaccine Ordering	ability for jurisdictional admin to allocate vaccine inventory per user defined parameters	E	Yes	
Vaccine Ordering	ability to activate vaccine ordering functionality for all designated organizations/facilities during a public health emergency	E	Yes	
Vaccine Ordering	ability for jurisdictional admin to create order sets	E	Yes	

Capability	Requirement: The IIS must/should have...	Priority: E, O (essential, optional)	Vendor response: Yes, Yes with customization*, No *Comment required	Vendor comment(s) If Yes with customization: Indicate the anticipated cost and timeline for development and release.
Review/Approve Order	ability for jurisdictional admin to review order	E	Yes	
Review/Approve Order	ability to support a rules-based decision logic to approve or reject order if above or below recommended order quantity	O	Yes	
Review/Approve Order	ability for jurisdictional admin to approve order	E	Yes	
Review/Approve Order	ability for jurisdictional admin to adjust order	E	Yes	
Review/Approve Order	ability for jurisdictional admin to electronically accept VFC vaccine into inventory	E	Yes	
Review/Approve Order	ability to accept each vaccine product in the IIS after shipment is received	E	Yes	
Vaccine Dose	ability to automatically decrement vaccine doses from inventory when matched vaccine doses are reported as administered	E	Yes	
Vaccine Dose	ability to automatically match vaccine doses reported as administered to vaccine doses in inventory to facilitate dose decrementing	E	Yes	
Vaccine Dose	ability to automatically decrement vaccine inventory in real-time via HL7 messaging	E	Yes	
Vaccine Dose	ability to automatically decrement vaccine inventory in real-time via UI data entry	E	Yes	
Vaccine Inventory	ability to reconcile vaccine doses currently in physical storage with vaccine doses reflected in system inventory	E	Yes	
Vaccine Inventory	ability to document reductions in vaccine inventory due to outgoing vaccine transfers	E	Yes	
Vaccine Inventory	ability to electronically document reductions in vaccine inventory due to outgoing vaccine wastage	E	Yes	
Vaccine Inventory	ability to enter current number of vaccine doses on-hand in physical storage	E	Yes	
Vaccine Inventory	ability to track and manage doses for vaccines: on hand, administered, wasted, expired, ordered, recalled, returned, transferred	E	Yes	
Vaccine Inventory	ability to enable removal of recalled lots from active inventory	E	Yes	
Vaccine Inventory	ability to print a reconciliation worksheet	O	Yes	
Vaccine Transfers	ability for jurisdictional admin to approve vaccine transfers	O	Yes	
Vaccine Transfers	ability for jurisdictional admin to initiate VFC vaccine transfers	O	Yes	
Vaccine Transfers	ability to accept VFC vaccine transfers	O	Yes	
Vaccine Transfers	ability for jurisdictional admin to reject vaccine transfers	O	Yes	
Vaccine Transfers	ability to search and view past vaccine transfers within a specified timeframe	O	Yes	
Vaccine Transfers	ability for jurisdictional admin to allow for direct vaccine transfer between facilities without jurisdictional pre-approval, but with jurisdictional visibility/oversight.	O	Yes	
Vaccine Wastage	ability to manage vaccine wastage	E	Yes	
Vaccine Wastage	ability to determine the total cost of wasted vaccine by user-defined parameters	E	Yes	
Vaccine Wastage	ability for jurisdictional admin to modify inventory quantity to reflect wastage	E	Yes	
Vaccine Wastage	ability for jurisdictional admin to assign reason for inventory wastage	E	Yes	
Vaccine Wastage	ability to determine the total doses of vaccine wasted by user-defined parameters	E	Yes	
Vaccine Expiration	ability to manage vaccine expiration	E	Yes	
Vaccine Expiration	ability to alert users to vaccine nearing expiration	O	Yes	
Vaccine Expiration	ability to provide alerts for inventory already expired	O	Yes	
Vaccine Expiration	ability for jurisdictional admin to modify inventory quantity removed from available inventory	E	Yes	

Capability	Requirement: The IIS must/should have...	Priority: E, O (essential, optional)	Vendor response: Yes, Yes with customization*, No *Comment required	Vendor comment(s) If Yes with customization: Indicate the anticipated cost and timeline for development and release.
Standard Reports	ability to generate a report that includes history and forecast	E	Yes	
Standard Reports	ability to generate a data quality report displaying information on the quality of submitted data	E	Yes	
Standard Reports	ability to generate a report that provides information on patient and vaccine matching and deduplication	E	Yes	
Standard Reports	ability to generate a report that provides information on data quality of data at rest	E	Yes	
Standard Reports	ability to generate data quality reports for HL7 submissions	E	Yes	
Standard Reports	ability to generate VFC reports	E	Yes	
Standard Reports	ability to generate a practice-level patient data report for VFC enrolled sites	E	Yes	
Standard Reports	ability to generate a doses administered report to support accountability for publicly-purchased vaccine	E	Yes	
Standard Reports	ability to generate a doses administered report for VFC enrolled sites	E	Yes	
Standard Reports	ability to generate VFC provider practice profiles	E	Yes	
Standard Reports	ability to generate a report showing the total number of select vaccines administered each month by facility	E	Yes	
Standard Reports	ability to generate a report displaying a change in vaccine administration patterns over a selected timeframe	E	Yes	
Standard Reports	ability to generate duplicate/merge record reports	E	Yes	
Standard Reports	ability to generate reports about IIS users	E	Yes	
Standard Reports	ability to generate vaccine management reports	E	Yes	
Standard Reports	ability to generate a report listing/identifying patients who received a recalled vaccine	E	Yes	
Standard Reports	ability to generate a report of patients declining or refusing vaccinations	O	Yes	
Standard Reports	ability to generate a report to calculate a facility's average vaccine usage	O	Yes	
Standard Reports	ability to generate VFC accountability reports for managing VFC inventories and orders	E	Yes	
Standard Reports	ability to generate vaccine inventory reports	E	Yes	
Standard Reports	hand	E	Yes	
Standard Reports	transactions	E	Yes	
Standard Reports	ability to generate report(s) that display information about vaccine order history	O	Yes	
Standard Reports	ability to generate report(s) that display information about vaccine wastage and returns	E	Yes	
Standard Reports	specific timeframe	E	Yes	
Standard Reports	ability to generate a report providing information about influenza pre-book orders	E	Yes	
Standard Reports	ability to query vaccine ordering patterns over a selected timeframe to indicate trends	O	Yes	
Standard Reports	ability to generate reports that provide information about organizations and facilities	O	Yes	
Standard Reports	ability for jurisdictional admin to generate report that lists immunizing facilities	O	Yes	
Standard Reports	ability for jurisdictional admin to generate a report that provides information on	O	Yes	
Standard Reports	ability for jurisdictional admin to access utilization of report/usage statistics	O	Yes	
Standard Reports	ability to generate reports that provide information about students and their immunization	E	Yes	
Standard Reports	ability to generate report of student exemptions by type (medical, religious)	E	Yes	
Standard Reports	ability to generate a record of students' immunizations for school purposes	E	Yes	
Standard Reports	ability to generate exclusion letters stating which vaccine(s) a student needs to come into	E	Yes	
Standard Reports	ability to generate reports for individuals vaccinated during a mass vaccination event	E	Yes	
Standard Reports	ability to generate doses administered reports for priority groups during a public health	E	Yes	

Capability	Requirement: The IIS must/should have...	Priority: E, O (essential, optional)	Vendor response: Yes, Yes with customization*, No *Comment required	Vendor comment(s) If Yes with customization: Indicate the anticipated cost and timeline for development and release.
Standard Reports	ability to generate a report that provides information about the status of the system in	E	Yes	
Ad Hoc Queries &	ability to generate queries and reports based on user-defined parameters	E	Yes	
Ad Hoc Queries &	ability to schedule an ad hoc query to run on a predetermined interval (i.e., daily, weekly,	E	Yes	
Ad Hoc Queries &	ability to generate reports with a user-defined report format	E	Yes	
Ad Hoc Queries &	ability to generate reports across geographic hierarchy levels	E	Yes	
Ad Hoc Queries &	ability to generate data to inform the public via website dashboards or similar means	E	Yes	
Ad Hoc Queries &	ability to store saved report templates	E	Yes	
Ad Hoc Queries &	ability to modify saved report templates	E	Yes	
Ad Hoc Queries &	ability to inactivate (archive) saved report templates	E	Yes	
Ad Hoc Queries &	ability to modify a query	E	Yes	
Ad Hoc Queries &	ability to delete a query	E	Yes	
Ad Hoc Queries &	ability to save an ad hoc query	E	Yes	
Ad Hoc Queries &	ability to create a map using geocodes for statistical reporting	O	Yes	
Print/Export Reports	ability to export IIS data for use in other systems	E	Yes	
Print/Export Reports	ability to export data in user-defined formats	E	Yes	
Print/Export Reports	ability to export aggregate level de-identified data	E	Yes	
Print/Export Reports	ability to export record level de-identified data	E	Yes	
Print/Export Reports	ability to print reports	E	Yes	
Consumer Access	ability for authorized consumers to access personal IIS data per jurisdictional policy	E	Yes	
Consumer Access	ability for authorized consumer to print forecast	O	Yes	
Consumer Access	ability for authorized consumer to print patient immunization record	E	Yes	
Consumer Access	ability for authorized consumer to print an official immunization history	E	Yes	
Consumer Access	ability for authorized consumer to retrieve a verifiable digital vaccine credential without	E	Yes	
Consumer Access	ability for authorized consumer to view immunization forecast	E	Yes	
Consumer Access	ability for authorized consumer to view patient information	E	Yes	
Consumer Access	ability for authorized consumer to view patient immunization record	E	Yes	
Consumer Access	ability for patient/patient representative to opt in for reminder/recall notifications	O	Yes	
Consumer Access	ability for patient/patient representative to opt out of reminder/recall notifications	O	Yes	

Attribute	Sub Characteristic	Requirement: The IIS must/should...	Priority: E, O (essential, optional)	Vendor response: Yes, Yes with customization*, No *Comment required	Vendor comment(s) If Yes with customization: Indicate the anticipated cost and timeline for development and release.
Performance	Time Behavior	support a responsive user interface	E	Yes	
Performance	Time Behavior	support application launch, i.e. time between user initiation and application start, in less than 10 seconds	E	Yes	
Performance	Time Behavior	support response to a user navigation action (e.g., mouse movement, keypresses, navigation) in less than 1	E	Yes	
Performance	Time Behavior	support response to process submitted information via direct data entry in less than 4 seconds	E	Yes	
Performance	Time Behavior	support generation of a standard, pre-configured report in less than 30 seconds	E	Yes	
Performance	Time Behavior	support responsive data exchange system interfaces	E	Yes	
Performance	Time Behavior	support electronic response to a submitted HL7 message in 5 seconds or less, 95% of the time	E	Yes	
Performance	Capacity	support up to 1000 concurrent users of the user interface without performance degradation	E	Yes	
Performance	Capacity	support multiple users viewing the same data at the same time	E	Yes	
Performance	Capacity	support users using the same function at the same time without degrading IIS performance	E	Yes	
Performance	Resource	support resource-intensive tasks without degrading IIS performance	E	Yes	
Performance	Resource	support user queries via the user interface without degrading IIS performance	E	Yes	
Performance	Resource	support generation of ad hoc reports without degrading IIS performance	E	Yes	
Performance	Resource	support data extracts without degrading IIS performance	E	Yes	
Performance	Capacity	support efficient processing of HL7 messages without performance degradation, as per jurisdictional capacity	E	Yes	
Performance	Capacity	support processing of up to 200 of HL7 VXU messages per hour without performance degradation	E	Yes	
Performance	Capacity	support processing of up to 8000 of HL7 QBP messages per hour without performance degradation	E	Yes	
Performance	Capacity	support permanent storage of records as per jurisdictional policy	E	Yes	
Performance	Capacity	support storage of unlimited number of organization records	E	Yes	
Performance	Capacity	support storage of unlimited number of user records	E	Yes	
Performance	Capacity	support storage of unlimited number of patient records	E	Yes	
Performance	Capacity	support storage of unlimited number of patient immunization records	E	Yes	
Usability	Accessibility	meet the United States Access Board Section 508 Standards	E	Yes	
Usability	Operability	support best practices for web application session management (e.g., cookies, cache) as recommended by the	E	Yes	
Usability	Operability	ability to execute Boolean searches	E	Yes	
Usability	Operability	ability to execute a wildcard searches	E	Yes	
Usability	User error	minimize data entry errors	E	Yes	
Usability	User error	assist in entering data correctly via pick-lists, drop-down boxes, or other easy-to-use options such as predictive	E	Yes	
Usability	User error	indicate required fields for data entry	E	Yes	
Usability	User error	ability to provide alert when required fields are left blank	E	Yes	
Usability	User error	support cross-field checks to ensure accuracy of information where dependencies exist (e.g., warning that a	E	Yes	
Usability	User error	support spell check functionality with medical terminology for all free text fields	O	Yes with customization	Time to develop 2 weeks, time to release 1 week at
Usability	User error	and error messages (error must be fixed prior to continuing)	E	Yes	
Usability	User interface	support alerts related to user interface response time	O	Yes	
Usability	User interface	support user feedback with a simple indicator for response times between 2-4 seconds	O	Yes	
Usability	User interface	support user feedback with expected response time and percent-done indicator for response times greater	O	Yes	
Usability	User interface	support users in stopping an operation expected to take longer than 10 seconds	O	Yes with customization	develop 1 week, time to release 1 week at no additio
Usability	User interface	support users in performing other tasks while waiting for the system to complete tasks expected to take longer	O	Yes	
Reliability	Availability	support availability of the system as per jurisdictional needs	E	Yes	
Reliability	Availability	support access to the web application 99.9% of the time	E	Yes	
Reliability	Availability	support processing of and response to HL7 messages 99.9% of the time	E	Yes	
Reliability	Recoverability	ability to backup the IIS data as per jurisdictional policy	E	Yes	
Reliability	Recoverability	support redundancy of the IIS as per jurisdictional recovery plan	E	Yes	
Reliability	Recoverability	support real-time failover	E	Yes	
Reliability	Recoverability	support the recovery of backed up data as needed	E	Yes	
Reliability	Recoverability	support the restoration of IIS data after an outage or loss	E	Yes	
Reliability	Fault tolerance	support the efficient roll back of software changes as needed	E	Yes	

Non-functional

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Attribute	Sub Characteristic	Requirement: The IIS must/should...	Priority: E, O (essential, optional)	Vendor response: Yes, Yes with customization*, No *Comment required	Vendor comment(s) If Yes with customization: Indicate the anticipated cost and timeline for development and release.
Security	Non-repudiation	support audit logs for security purposes	E	Yes	
Security	Integrity	ability to electronically notify the system administrator of unauthorized activity	E	Yes	
Security	Authenticity	ability to track all attempted accesses that fail identification, authentication and authorization requirements	E	Yes	
Security	Authenticity	ability to track all accesses that successfully comply with identification, authentication and authorization	E	Yes	
Security	Non-repudiation	ability to maintain audit logs for specified time per jurisdictional policy	E	Yes	
Security	Non-repudiation	ability for jurisdictional admin to search audit log by function performed	E	Yes	
Security	Non-repudiation	ability for jurisdictional admin to search audit log by date and time period	E	Yes	
Security	Non-repudiation	ability for jurisdictional admin to search audit log by date range	E	Yes	
Security	Non-repudiation	ability for jurisdictional admin to search audit log by user defined parameters	E	Yes	
Security	Non-repudiation	ability for jurisdictional admin to search audit log by patient identifiers	E	Yes	
Security	Non-repudiation	ability for jurisdictional admin to filter audit log search by user defined parameters	O	Yes	
Security	Non-repudiation	ability for jurisdictional admin to sort audit log search results	O	Yes	
Security	Integrity	store audit data related to user access/viewing of patient records in the system	E	Yes	
Security	Integrity	store date of user access to a patient record	E	Yes	
Security	Integrity	store time of user access to a patient record	E	Yes	
Security	Integrity	store user ID of user access to a patient record	E	Yes	
Security	Non-repudiation	store audit data related to data changes in the system	E	Yes	
Security	Non-repudiation	store 'date received' for data modified in the system	E	Yes	
Security	Non-repudiation	store 'time received' for data modified in the system	E	Yes	
Security	Non-repudiation	store 'date updated' for data modified in the system	E	Yes	
Security	Non-repudiation	store 'time updated' for data modified in the system	E	Yes	
Security	Non-repudiation	store user associated with data modified in the system	E	Yes	
Security	Integrity	automatically enforce session timeout for a user when idle period is reached	E	Yes	
Security	Integrity	ability for automatic session timeout to be customized per jurisdictional policy	O	Yes	
Security	Integrity	ability to notify the user the session will expire	O	Yes	
Security	Confidentiality	support masking of passwords as they are typed or entered into the user interface	E	Yes	
Security	Integrity	ability for system administrator to terminate user connections	E	Yes	
Security	Confidentiality	Safeguard electronic personally identifiable information by implementing the appropriate technical best	E	Yes	
Security	Confidentiality	ability to encrypt personally identifiable information at rest	E	Yes	
Security	Confidentiality	ability to decrypt personally identifiable information at rest	E	Yes	
Security	Confidentiality	ability to encrypt personally identifiable information during transmission	E	Yes	
Security	Confidentiality	ability to decrypt personally identifiable information during transmission	E	Yes	
Security	Integrity	ability to maintain firewalls per ARA's Security Guidance Considerations for Immunization Information Systems	E	Yes	
Security	Integrity	ability to maintain firewalls for protection of the hosting network	E	Yes	
Security	Integrity	ability to maintain firewalls for protection of the hosting environment	E	Yes	
Security	Integrity	ability to electronically notify the system admin of unauthorized activity	E	Yes	
Security	Integrity	ability to support anti-virus protection at current critical patch levels in the hosting environment	E	Yes	
Maintainability	Analyzability	support event logging	E	Yes	
Maintainability	Analyzability	ability for system admin to enable event logging on all servers	O	Yes	
Maintainability	Analyzability	ability for system admin to enable event logging on all devices	O	Yes	
Maintainability	Analyzability	ability for system admin to disable event logging on all devices	O	Yes with customization	Time to develop 1 week, time to release 1 week at no
Maintainability	Analyzability	ability for system admin to limit access to event logs, including System, Application, Web and Database logs	O	Yes with customization	Time to develop 1 week, time to release 1 week at no
Portability	Adaptability	support use of web browsers per jurisdictional policy	E	Yes	
Portability	Adaptability	support use of current version of web browsers	E	Yes	
Portability	Adaptability	support use of last prior version of web browsers	E	Yes	
Portability	Adaptability	support a responsive design that renders properly on multiple devices	E	Yes	
Portability	Adaptability	support web client use on a desktop	E	Yes	

Non-functional

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Attribute	Sub Characteristic	Requirement: The IIS must/should...	Priority: E, O (essential, optional)	Vendor response: Yes, Yes with customization*, No *Comment required		Vendor comment(s) If Yes with customization: Indicate the anticipated cost and timeline for development and release.
Portability	Adaptability	support web client use on a laptop	E	Yes		
Portability	Adaptability	support web client use on a tablet	E	Yes		
Portability	Adaptability	support web client use on a smartphone	E	Yes		
Portability	Installability	be containerized (e.g., Docker or Kubernetes) to support easy installation and system updates	E	Yes		
Portability	Installability	be containerized for cloud based environments	O	Yes		

Glossary of Terms

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Terms and definitions used within requirements. Note: For definitions of general terms related to immunizations, see the [CDC Vaccines and Immunizations Glossary](#).

For definitions of general terms related to IIS, see the [AIRA MIROW Common Vocabulary resources](#).

Term	Definition
Admin	Refers to a jurisdictional admin and organizational admin.
Associate (verb)	Establish a relationship between entities. Synonymous with "link."
At rest	Used to refer to data in storage within the IIS.
Audit log	Also referred to as an audit trail. Used to refer to the tracking of information about system activity and changes, used for security purposes.
Authorization agreement	Formal or legal agreement between an organization submitting and/or using immunization data and the jurisdiction that outlines terms for participating in the IIS per jurisdictional policy (e.g., data use agreements, user agreements).
Authorized consumer	A consumer authorized to access IIS records such as their personal vaccination records or those for individuals for whom they are guardians/care-takers.
Authorized user	Individual authorized to access the system based on their role and affiliation with an IIS-authorized organization.
Automatically	Ability for the system to take action without manual intervention.
Capture	Ability to enter data via user interface (UI) or data exchange interface for immediate usage. Does not necessarily imply storage.
Clinician	A clinician or health care professional who orders and/or administers vaccines (e.g., vaccine ordering provider, vaccine administering provider).
Cohort	A group of patients of particular interest to an organization and/or facility (e.g., a group of health plan members, a group of students, group of individuals with the same age).
Containerization	Containerization packages an application along with all its necessary configuration files, libraries, and dependencies, ensuring it runs efficiently and without bugs across various computing environments.
Delete	Process by which data are removed from the IIS system, including removal from data table(s). Synonymous with "purge."
During transmission	Used to refer to data being transmitted or actively moved from one location to another.
Edit	Global term to reflect ability to modify, update, and change data. For a particular field, this also includes the ability to delete field-level data that is no longer accurate.
Electronic notification	Communication/message sent to a user without manual intervention.
Electronic response	The IIS returns a final resolution, or outcome, of processing the HL7 message with a conformant HL7 (Health Level Seven) message.
Enroll	Process by which an organization or a facility is authorized to participate in an IIS and/or in a jurisdictional Vaccines for Children (VFC) program,
Event log	Tracking (i.e., storing) information about system activity and changes, used for IT support and maintenance.
Facility	A sub-organizational unit for organizations with multiple locations. May also be synonymous for "organization" for organizations with one
Immunization Information System	Refers to the application, data and staff that record all immunization doses administered by participating providers to individuals within a given
Inactivate	To make inoperable.
Interface (noun)	Connection between two or more systems for transmission of data.
Interface (verb)	Act of securely exchanging data to facilitate data use.
Interoperate	Data are transmitted from one system to be consumed by another.
Jurisdictional admin	Jurisdictional IIS staff authorized to enter and modify information in the IIS.
Jurisdictional vaccine program admin	Jurisdictional vaccine program staff authorized to enter and modify VFC- and vaccine program-related information in the IIS.

Glossary of Terms

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Terms and definitions used within requirements. Note: For definitions of general terms related to immunizations, see the [CDC Vaccines and Immunizations Glossary](#)

For definitions of general terms related to IIS, see the [AIRA MIROW Common Vocabulary resources](#).

Term	Definition
Manage	Global term used to refer to the ability to add, edit, or otherwise modify information.
Notification	A push communication to an authorized user.
Order set	A standardized group of supply items that can ordered at one time that create efficiencies in the ordering process.
Organization	An entity that may provide data to an IIS and/or may consume IIS data and information (e.g., provider organization, school). An organization
Organizational admin	Staff within the organization (e.g., clinic, facility, LHD) responsible for maintaining the organization/facility information in the IIS, including
Patient	Used to refer to an individual. Synonymous with "client."
Personally identifiable information	"Any information about an individual maintained by an agency, including (1) any information that can be used to distinguish or trace an
Process	The IIS reads the incoming data and takes appropriate action based on the data submitted and previously known information already in the IIS.
Provider	A vaccinating or non-vaccinating health care professional authorized to submit, access and/or use IIS data.
Provider organization	A type of organization that has any combination of the following characteristics: provides vaccination services, responsible for an entity that
Query	A question posed of the IIS data.
Recall	A notification sent to individuals who are overdue for a vaccination.
Re-enroll	Process by which a previously enrolled organization or facility is re-authorized to participate in an IIS and/or in a jurisdictional VFC program, per
Reminder	A notification sent to individuals who are due to receive a vaccination soon.
Report	System generated data or information available in suitable formats, which may include outputs of queries.
Store	Maintenance of data for potential future use. Note: use of "store" also implies data capture.
System admin	Jurisdictional administrator responsible for oversight of the IIS technology, typically an IT role.
System alert	A communication broadcast to authorized users.
Track	Follow the steps of a process to note a modification.
User	Individual associated with an organization authorized to access the IIS system to submit and/or consume IIS data and information (e.g., clinic
User agreement	Agreement between a representative(s) of an organization and the jurisdiction, outlining terms for participation in the IIS, per jurisdictional
User-defined parameter	An element selected by a user to define the scope of a particular process or activity.
Vaccines for Children (VFC) provider	A type of provider organization, specifically, a provider organization that is enrolled in the VFC program.
Vaccine program	A program managed and administered by a jurisdiction to provide specified vaccine(s) to specified organizations or facilities (e.g., Vaccines for

		IIS Functional Model Functions										IIS Functional Model Attributes					
Standard	Guidance Statement	Administer System	Manage Organizations and Facilities	Manage Users	Support Interoperability	Ensure Data Quality	Evaluate and Forecast	Manage Patient and Immunization Records	Manage Vaccine Inventory	Provide Data Access	Performance	Usability	Reliability	Security	Maintainability	Portability	
Establish and maintain a secure, confidential immunization information System.	1.0 The IIS is physically and digitally secured in accordance with policies and Industry standards for protected health Information, security, and encryption.			x							x	x	x	x	x	x	
	1.1 The IIS establishes, documents, and updates policies and procedures to manage the collective functions, capabilities, and attributes of an IIS.										x	x	x	x	x	x	
	1.2 The IIS establishes and maintains the technical infrastructure to securely capture, store, and process patient demographic and vaccination data consistent with established policies and procedures.										x	x	x	x	x	x	
	1.3 The IIS provides ongoing training to ensure awareness of and to promote adherence to policies and procedures.			x										x			
	2.0 The IIS is physically and digitally secured in accordance with Industry standards for disaster avoidance, mitigation, and recovery.												x	x			
	2.1 The IIS establishes and maintains the infrastructure needed for disaster avoidance.												x	x			
	2.2 The IIS establishes and tests recovery plans to mitigate system downtime.												x	x			
	3.0 The IIS defines service expectations between the program and the entities providing information technology support to ensure system availability and uninterrupted data flow.										x	x	x	x	x	x	
	3.1 The IIS implements service-level agreements between the program and the entities providing information technology and support.										x	x	x	x	x	x	
	3.2 The IIS implements and maintains the Infrastructure to fulfill service-level agreements.										x	x	x	x	x	x	
Continuously improve IIS data quality.	4.0 The IIS validates patient demographic and vaccination data.	x			x	x	x	x		x		x					
	4.1 The IIS supports the identification, prevention, and resolution of duplicate and fragmented patient demographic and vaccination data in accordance with policies and procedures.					x											
	4.2 The IIS monitors data quality within the IIS in accordance with policies and procedures.	x			x	x	x	x		x							
	4.3 The IIS uses electronic tools to standardize and/or validate addresses in the IIS.	x						x									
	4.4 The IIS delivers feedback and training to IIS partners and providers to ensure complete, timely, and accurate patient demographic and vaccination records.																
	jurisdictional data quality					x	x			x		x					

IIS Functional Standards, v5.0		IIS Functional Model Functions									IIS Functional Model Attributes						
	Standard	Guidance Statement	Administer System	Manage Organizations and Facilities	Manage Users	Support Interoperability	Ensure Data Quality	Evaluate and Forecast	Manage Patient and Immunization Records	Manage Vaccine Inventory	Provide Data Access	Performance	Usability	Reliability	Security	Maintainability	Portability
Promote electronic exchange between IIS and its partners and providers.	5.0	The IIS Manage interfaces for exchange and integration of data electronically between the IIS and other information systems in accordance with federal and jurisdictional standards.															
		accordance with current				X	X				X	X	X	X			
		enrolls, and onboards IIS				X						X					
		evaluates data submitted via				X	X				X		X				
Ensure the delivery of immunization services reflects current recommendations.	6.0	The IIS supports pediatric, adolescent, and adult immunization forecasts consistent with Advisory Committee on Immunization Practices (ACIP) recommendations.															
		maintains Clinical Decision						X									
		maintains Clinical Decision						X									
								X									
Ensure appropriate access to data.	7.0	The IIS ensures authorized users have access to patient demographic and vaccination data based on user roles and permissions.															
		confidentiality policies that	X	X	X				X		X		X		X		
		comprehensive account													X		
		attributes for the set up and	X	X	X										X		
		in accordance with policies and															
		IIS partners' and providers'	X	X	X						X						
		covers accessing patient							X				X				
Support the ration and use of data through various systems and formats.	8.0	The IIS supports authorized public access to official immunization records.															
		with direct access to									X				X		X
											X				X		X
	9.0	The IIS supports the reporting needs of federal and jurisdictional immunization programs.															
		and ad hoc reports to meet									X						
	10.0	The IIS supports ad-hoc queries of patient demographic and vaccination data.															
		access for internal authorized									X				X		
		data for data visualization,									X				X		
	11.0	The IIS supports investigation and reporting of vaccine adverse events.															
		adverse event investigation,							X								
Support federal and jurisdictional vaccine program requirements.	12.0	The IIS supports the ability to generate coverage reports that users can access without assistance from IIS staff.															
		data to assess vaccination						X	X		X						
		status at provider site and							X		X						
		training on accessing,									X						
		compliance with immunization						X			X						
	13.0	The IIS supports reminder/recall activities.						X	X								
		conducting reminder/recall						X	X								
	14.0	The IIS supports management and quality assurance functions for federal and jurisdictional vaccine programs.								X	X	X		X			
		program procedures in												X			
		tracking of eligibility at the dose								X							
Support federal and jurisdictional vaccine program requirements.	15.0	The IIS supports vaccine inventory management and reconciliation according to federal and jurisdictional vaccine program requirements.															
		listing patients that received a									X						
		listing provider sites that								X	X						
		inventory management,								X	X						
		vaccine orders and monitoring								X	X						
		vaccine returns and wastage.								X	X						
		decrements administered doses								X	X						
Support federal and jurisdictional vaccine program requirements.	16.0	The IIS supports data exchange with the national Vaccine Tracking System (VTrckS).															
		exchange with VTrckS in				X											
		to ExIS functionality following				X											
		automated data exchange with				X											

IIS Functional Standards, v5.0		IIS Functional Model Functions									IIS Functional Model Attributes					
Standard	Guidance Statement	Administer	Manage	Manage	Support	Ensure Data	Evaluate	Manage	Manage	Provide	Performance	Usability	Reliability	Security	Maintainability	Portability
		System	Organizations and Facilities	Users	Interoperability	Quality	and Forecast	Patient and Immunization Records	Vaccine Inventory	Data Access						
Support response for vaccine-preventable disease outbreaks and other public health emergencies.	17.0 The IIS supports partner and provider onboarding and vaccine management during vaccine-preventable disease response and/or public health emergencies.	X	X	X	X			X		X		X				X
	coordinates, and executes											X				
	17.2 The IIS supports expedited communication and onboarding with partners to capture patient demographic and vaccination data in an emergency.	X	X	X												
	onboarded partners.		X													
	administration functionality to							X								X
	integration with tools for				X											
	health immunization reporting									X						
Participate in and utilize emerging technologies and standards.	18.0 The IIS participates in modernization Initiatives and emerging technologies.														X	
	modernization efforts.														X	
	efforts that align IIS initiatives														X	
	initiatives to develop standards														X	