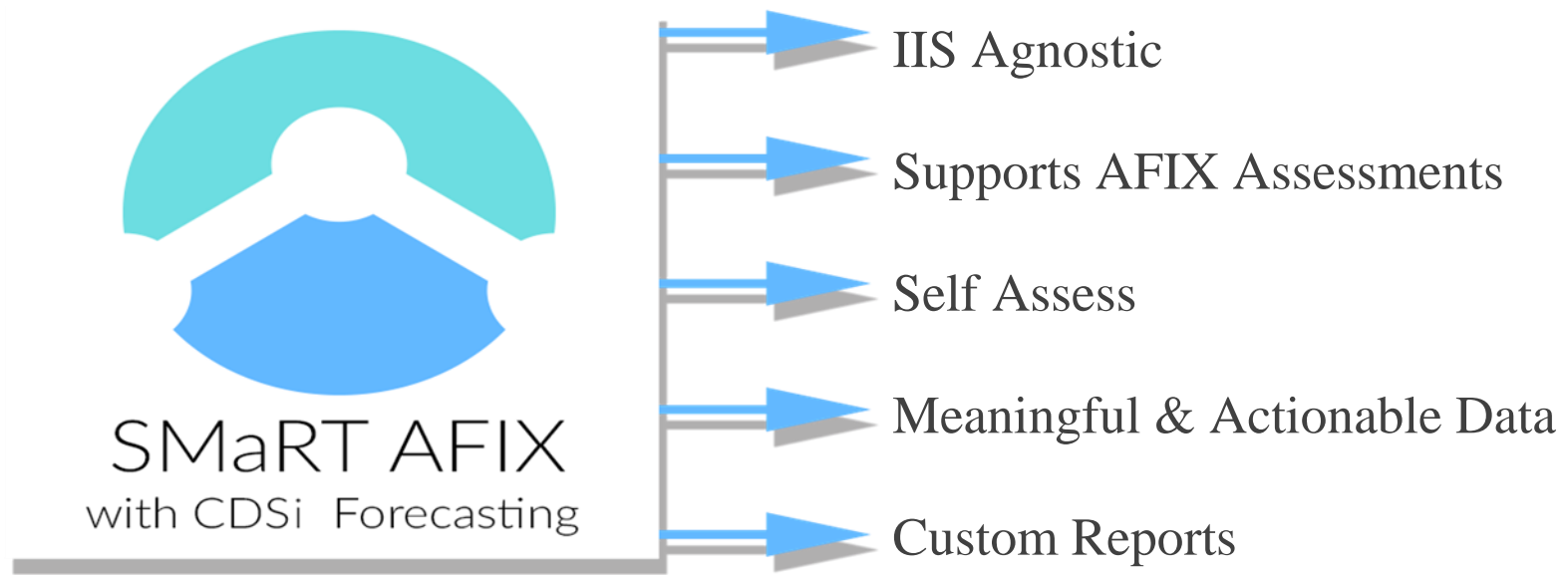


CHANGE in Workshop Content

- Get SMaRT (AFIX)!
 - Results of an Independent Assessment of the SMaRT AFIX Tool
- Indiana's Journey to SMaRT AFIX
 - Indiana's management approach to preparing for, testing, and implementation of SMaRT AFIX
- IIS and Immunization Quality Improvement for Providers (IQIP)
 - Highlight IIS related aspects of the new IQIP program



Get SMaRT (AFIX)!

2018 AIRA National Meeting

OVERVIEW

- Project Background
- Independent Assessment
 - Methodology
 - Results
 - Risk and recommendations
- What did we do with the information?

PROJECT BACKGROUND



INDEPENDENT ASSESSMENT



METHODOLOGY

- The Assessment team's approach to assessing any SMaRT AFIX tool was to focus on two objectives:
 - Does the SMaRT AFIX tool perform as required by the Phase 1 Requirements?
 - Are the tool, processes and documentation sufficient to allow an awardee to implement, operate and maintain the system with little to no interaction with the development vendor?

RESULTS

“The Assessment Team finds this type of development in support of multiple awardees is an efficient and cost-effective way of reducing the redundancy of numerous separate development effort as well to provide a consistent and stable approach to addressing the needs across multiple entities.

The awardees taking advantage of SMaRT AFIX will save resources, time and funds by not having to undergo a daunting development effort to align their program to the AFIX requirements.”

RISKS AND RECOMMENDATIONS

- **API Process Handling of Updates and Deletes**
 - The Assessment Team recommends that details on how an IIS's data is processed, held and presented in SMaRT AFIX be detailed in the Maintenance and Operations Guide. These details would help the IIS staff understand and diagnose issues related to how data is included in SMaRT AFIX
- **API File Processing Requiring Large Dataset Management and Processing Time**
 - The Assessment Team recommends expanding the options for integration between the IIS data store and the SMaRT AFIX data store
- **Lacking Implementation Documentation**
 - The Assessment Team recommends that a comprehensive Installation Guide be produced that consolidates the most current and detailed information on how to properly install and validate a new installation of SMaRT AFIX on all available platforms.

WHAT DID WE DO WITH THE INFORMATION?

- Findings discussed with the SMaRT AFIX vendor
- CDC and the current vendor who supports SMaRT AFIX prioritized recommendations. Of the 29 issues reported:
 - 2 are outside requirements
 - 6 are marked "Will address pending availability of hours in contract"
 - 4 are marked "For future consideration"
 - 2 are considered a non-issue for now but can be revisited in the future if needed
 - 2 are not reproducible
 - 2 have been addressed and will be included in the next release
 - 2 are pending CDC feedback
 - the remaining are being worked on and incorporated into the backlogs for SMaRT and/or iWeb

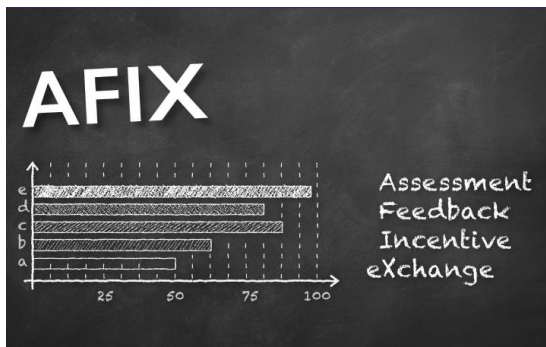
RESOURCES

AIRA Repository: Phase 1 guides and PowerPoints

AFIXIIS@cdc.gov

SharePoint Portal

SMaRT website



INDIANA'S JOURNEY TO SMART AFIX

Thursday, August 16, 2018

Presenter:

- Vijay Pathangi – Indiana State Department of Health

ACKNOWLEDGMENTS

- Reiss Lueken – Director of Quality and Special Projects
- Rudith Laine – Public Health Associate
- Scientific Technology Corporation

CURRENT STATE (AFIX-IIS)

- SMaRT AFIX Production live as of 07/09/2018 (*internal use*)
- S**MaRT AFIX Testing**
 - QA: Functionality and data testing completed as of 06/29/2018.
 - Prod: Functionality testing completed. Data testing is still ongoing.
- U**pcoming STC Releases**
 - Indiana will prioritize deploying and testing all future STC patches in both S**MaRT AFIX** QA and production environments.

CURRENT STATE (AFIX PROGRAM)

- Indiana AFIX site visits for the current AFIX 2018-2019 project year started on August 6, 2018.
- SMaRT AFIX release for AFIX Program purposes : Oct-2018
 - **Implementation Plan:**
 - Use CoCASA until SMaRT AFIX is ready to be deployed. Providers who receive CoCASA reports will continue to receive throughout entire AFIX site visit.
 - Providers who receive SMaRT AFIX reports for their feedback visit will not receive CoCASA reports during the AFIX project year.
 - All Indiana AFIX staff have been trained on AFIX-IIS Phase 1 standards and the SMaRT AFIX application.

BACKGROUND

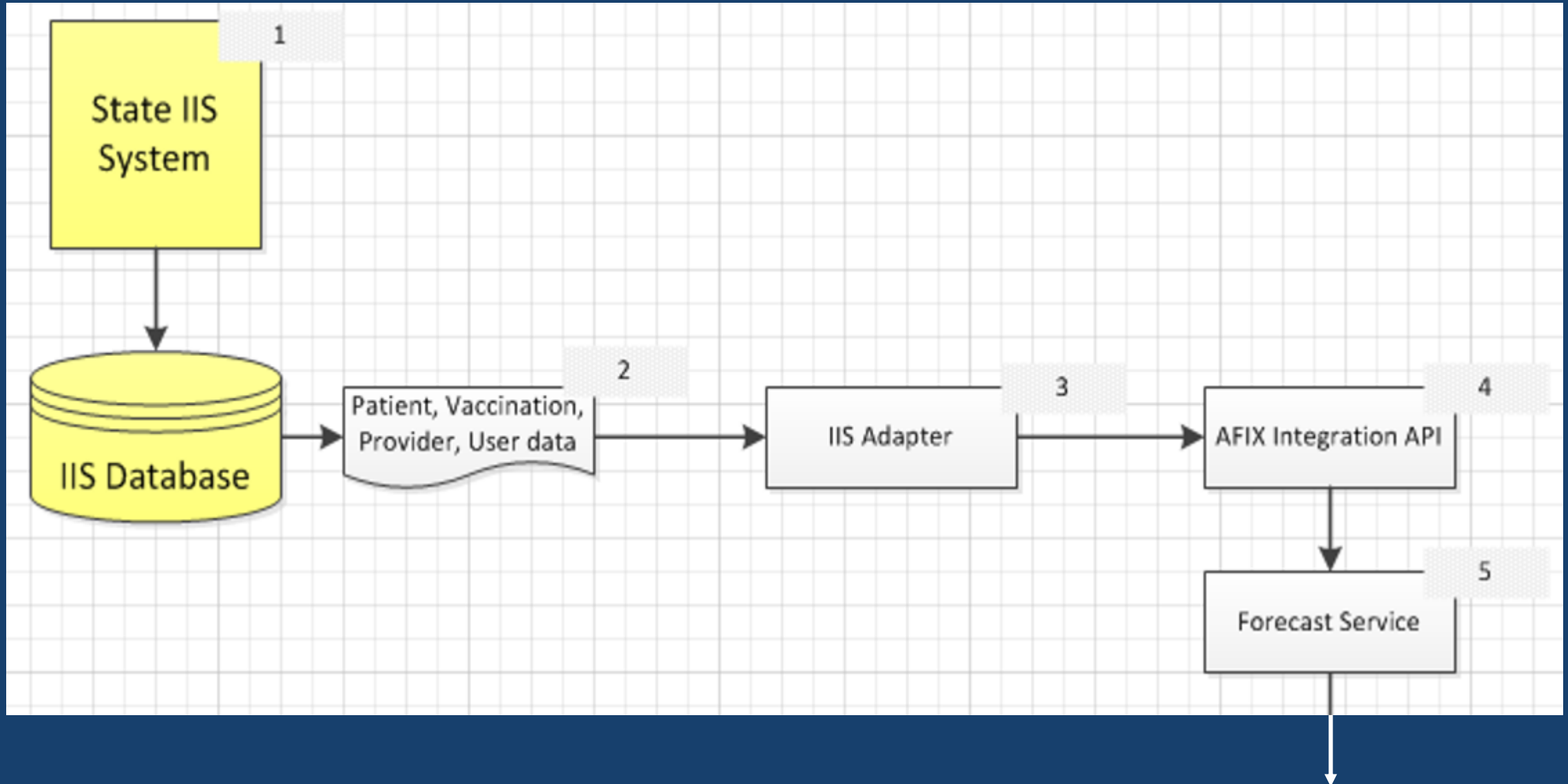
- **Stakeholders:**

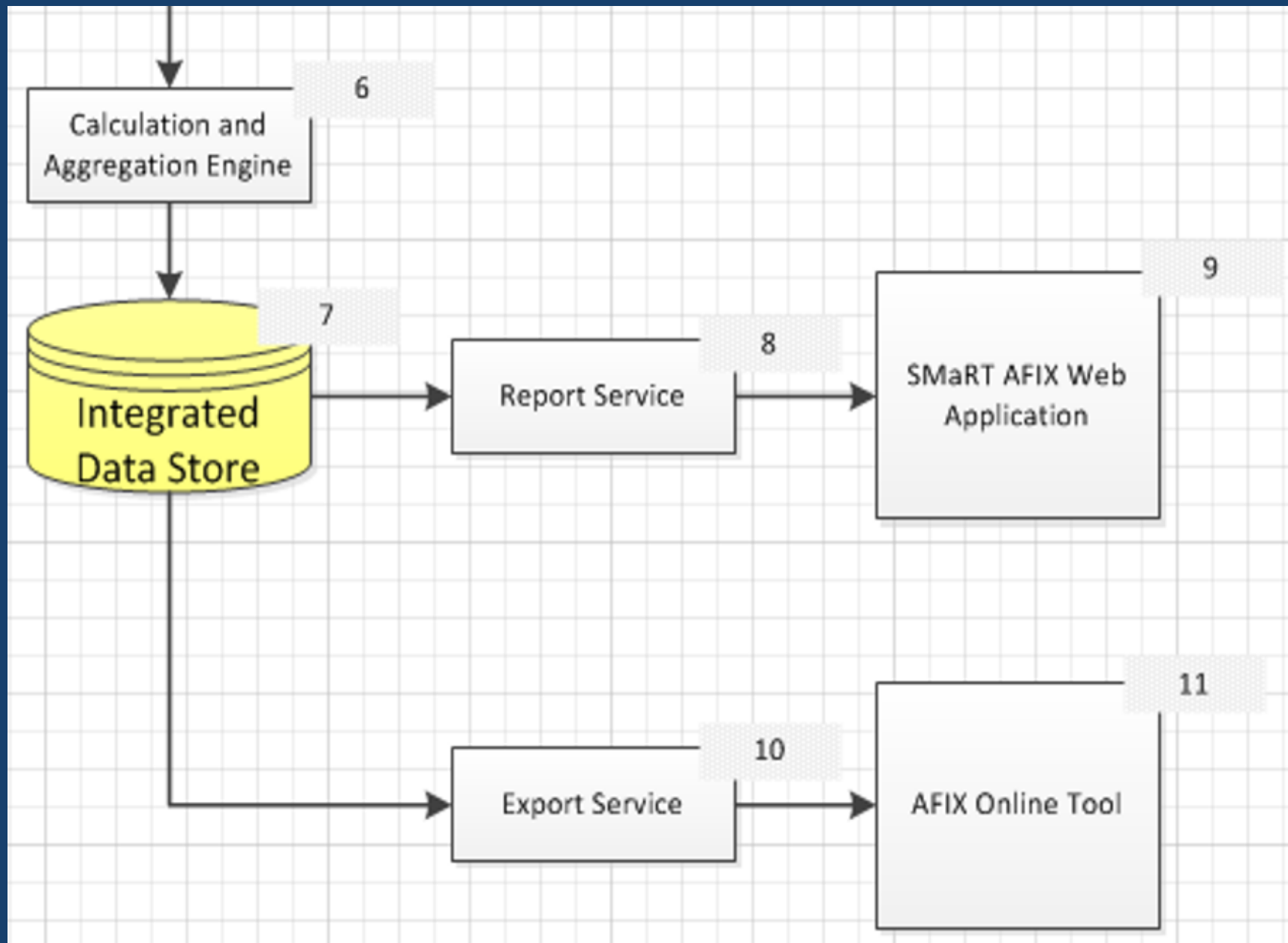
- IIS Staff (*Vijay Pathangi, Leena Victoria*)
- Immunization Staff (*Reiss Lueken, Rudith Laine*)
- Indiana Office of Technology (*Project Manager, IOT technical staff*)
- Scientific Technologies Corporation (*Michelle Korrell, Ashley McDonald, technical staff*)
- Centers for Disease Control and Prevention (*AFIX and AFIX-IIS team*)

- **STC Consortiums:**

- Training & Education Consortium
- SMaRT AFIX Consortium
- SMaRT AFIX Testing Consortium
- Others (*Interoperability, VOMS, etc.*)

DATA FLOW





SMaRT AFIX Implementation

*STRENGTHS, CHALLENGES &
AREAS FOR IMPROVEMENT*

OUR STRENGTHS

- Close collaboration between Immunization Program and IIS/CHIRP team
- Assigned IOT Project Manager
 - Project coordination and communication amongst various stakeholders/agencies
- Self-hosted
 - Provided for some flexibility

CHALLENGES

- Protective Zone Environment

- Background:

- IOT mandated all new or updated state systems or software applications that contained personally identifiable information (PII) must be migrated to a new protective zone database environment.

- Problem:

- Database migration from 11g to 12c
 - Numerous restrictions on installation of new software
 - Firewall rules

- Solution:

- Work with IOT- on getting new software approved quickly and obtain firewall exemptions

CHALLENGES

- Finalizing SMaRT AFIX QA Installations

- Problem:

- Basic issues with installation of application software
 - Memory availability issues with the servers

- Solution:

- IOT reconfigured / repartitioned the QA servers to identify the root cause
 - Reinstalled the QA environment based on the Proof of Concept (POC) environment
 - SMaRT AFIX QA Installs Completed in May 2018

CHALLENGES

- **Problem:**
 - Patients and/or vaccination records not migrating over to SMaRT AFIX PostgreSQL database after nightly refresh, OR
 - Lag time from when select patients and/or vaccination records would migrate to SMART AFIX after nightly refresh (Lag time: 1-3 days)
- **Implications:** Impacting number of patients in cohort AND coverage and missed opportunity calculations.
- **Findings:** Space issues with POC environment. ETL job was failing to complete. Worked with vendor to resolve this issue.

OPPORTUNITIES FOR IMPROVEMENT

- Self-hosted
 - Installation documentation tailored to cloud-based IIS
 - Learning curve for installations
 - Installations for self-hosted IIS differ significantly from cloud-based IIS systems
- Complicated architecture
- Limited staff and competing priorities
- State IT restrictions
 - IOT protected zone mandate for all new software's containing protected health information

MILESTONE HIGHLIGHTS

- **July 2017:** Indiana presented SMaRT AFIX and other training materials to other STC states during STC's Training & Education Consortium.
- **November 2017:** Oracle 12c server upgrade completed
- **January 2018:** STC conducted SMaRT AFIX training with Indiana staff
- **January 2018:** SMaRT AFIX POC installs completed
- **April 2018:** Indiana AFIX staff completed AFIX and AFIX-IIS training

MILESTONE HIGHLIGHTS

- **May 2018:** SMaRT AFIX QA installs completed
- **May 2018:** Indiana presented AFIX and AFIX-IIS updates during the 2018 Indiana Public Health Nurse Conference.
- **June 2018:** Indiana AFIX staff completed follow-up AFIX and AFIX-IIS training
- **July 2018:** SMaRT AFIX Prod installs completed

SMaRT AFIX TESTING

INDIANA'S SMaRT AFIX TESTING TIMELINE

(MARCH 2018 – PRESENT)

- Step 1: Complete STC Test Scenarios
- Step 2: Thinking Outside the Box
- Step 3: Functionality Issues Identified
- Step 4: SMaRT AFIX vs. CoCASA Analysis
- Step 5: Complete Indiana's Custom Test Scenarios
- Step 6: Next Steps & Recommendations

STEP 1: STC'S TEST SCENARIOS

- All test scenarios included in STC's testing script were completed in some capacity by the Indiana testing team and all results were validated.



STEP 2: THINKING OUTSIDE OF THE BOX

1. Patient Active/Inactive Status (PAIS) in CHIRP QA:

- Childhood and adolescent patients created and assigned to existing VFC providers with active status.
 - **Result:** After nightly refresh, all test patients were listed in the appropriate provider cohorts.
- Inactivated same test patients for select existing VFC providers.
 - **Results:** After nightly refresh, all test patients were no longer active with those facilities.

STEP 2: THINKING OUTSIDE OF THE BOX

2. Update demographic and vaccination records in CHIRP QA:

- Change the date-of-birth (DOB) to age patient out of select cohorts.
 - **Result:** After nightly refresh, patients no longer included in reports
- Inactivated same test patients for select existing VFC providers.
 - **Results:** After nightly refresh, all test patients were no longer active with select facilities.

STEP 3: MISCELLANEOUS FINDINGS

1. Patients from newly added facilities not migrating to SMaRT AFIX.
 - Observed in SMaRT AFIX QA and Prod
 - **Findings:** All fields in the CHIRP Facility Maintenance page must be filled for migration to occur.
 - Currently not a required field for EMR messages
 - **Future Tasks:** Educate newly enrolled providers to work with their internal IT staff or EMR vendors to ensure all fields in the Facility Maintenance page are completed prior to being sent electronically through HL7.

STEP 3: MISCELLANEOUS FINDINGS

2. Facility Search yields inconsistent results

- **Findings:** Search results not closely related to the VFC PIN or facility name searched by the user.
- **Solution:** Shared with STC and future guidance expected in coming weeks.



SMaRT AFIX
Powered by STC

Overview

Childhood

Adolescent

AFIX Export

Master Rate

Custom

Manage Reports

11-19 males



P00179



TIPPECANOE COUNTY HEALTH DEPT

ID: 116278



TIPPECANOE COUNTY HEALTH DEPT

ID: 1137477 - VFC PIN: P00179



FLOYD MEMORIAL MEDICAL GROUP

ID: 2200001



001

ID: 71527



IU HEALTH

ID: 495150



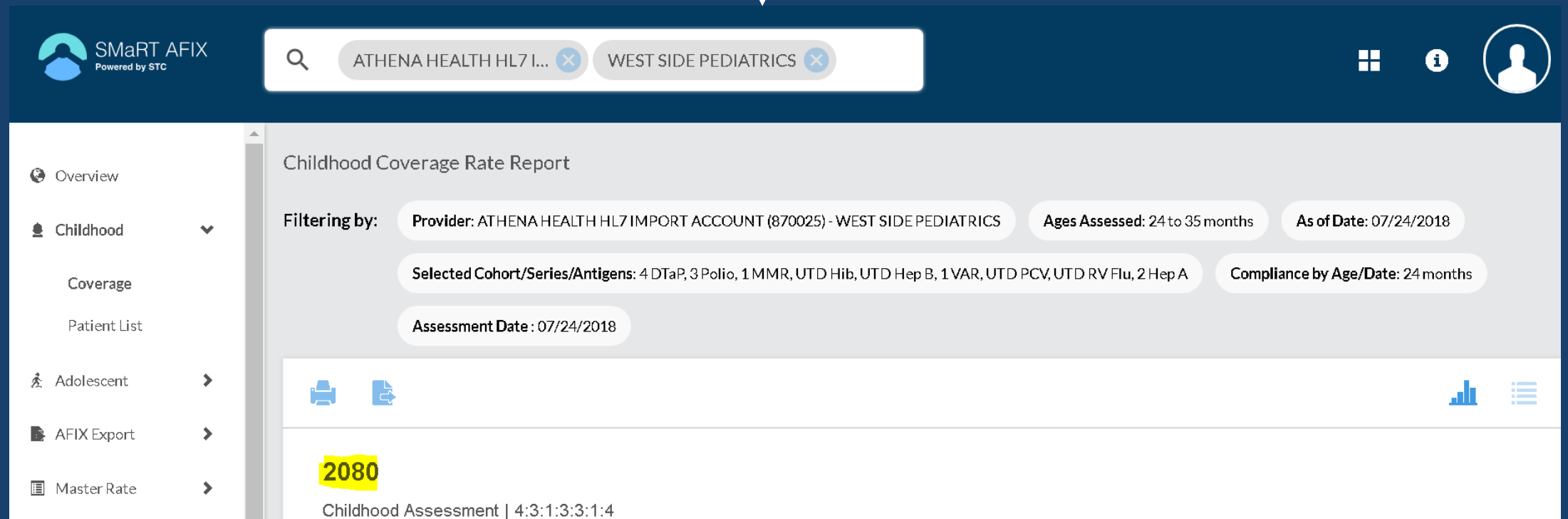
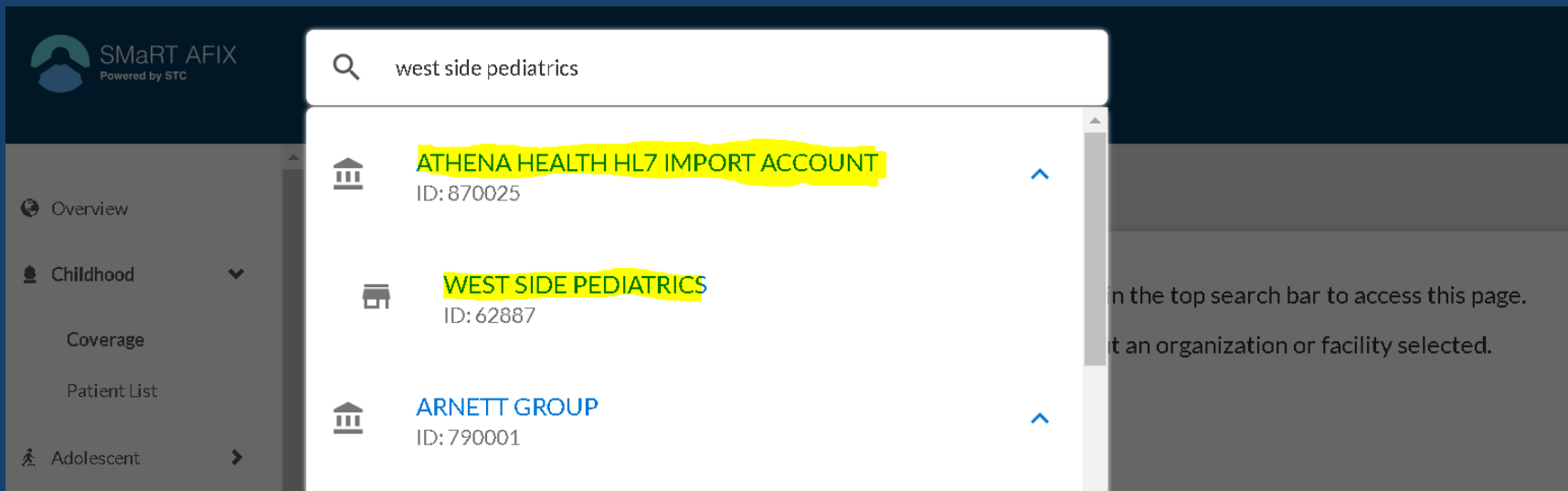
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STEP 3: MISCELLANEOUS FINDINGS

3. Facility Name VS Facility Display Name

- **Findings:** Reports for facilities without an IRMS/Facility name contain a numerical identifier causing confusion among providers receiving AFIX site visit.
 - In addition, some IRMS/Facility names are not recognizable to select providers
- **Solution:** Facility Display Name takes precedence over the Facility Name field. Use Facility Name when the Facility Display Name is null.



STEP 3: MISCELLANEOUS FINDINGS

4. Intermittent error message when searching for providers either by VFC PIN or Facility Display Name in the search field.
 - **Solution:** Ongoing efforts to resolve issues internally
5. Anonymous patients included in coverage reports and patient lists
 - **Solution:** Ticket has been submitted by IIS vendor.
6. Other functionality issues identified in QA were resolved in the Prod environment (i.e. system speed, export errors, etc.)

STEP 4: COMPARISON ANALYSIS

(SMaRT AFIX & CoCASA)

Goal: To compare coverage rate and missed opportunity percentages and counts from for both sets of reports for n=5 VFC providers to identify any “significant” logic and/or forecasting issues. The same criteria was used for both sets of reports.

Limitations: SMaRT AFIX and CoCASA reports are not directly comparable due to differences in logic and forecasting.

- Comparison analysis did not include meningococcal because logic is not current.

STEP 4: COMPARISON ANALYSIS

(SMaRT AFIX & CoCASA)

Methods (Step 1): Exported data from Indiana's IIS/CHIRP QA and imported into CoCASA to generate the following childhood and adolescent reports for n=5 VFC providers:

– Childhood:

- Childhood Diagnostic Report (n=1)

– Adolescent:

- Adolescent Coverage Report (1 Tdap)
- HPV Report (n=1)

Methods (Step 2): Generated the standard AFIX Coverage Report and Patient List
– Missed Opportunities from SMaRT AFIX QA for each n=5 VFC providers.

ROUND 2 RESULTS

(CHILDHOOD SERIES RESULTS)

VFC PIN	CHILDHOOD ASSESSEMENT			
	CoCASA		SMaRT AFIX	
	4:3:1:3:3:1:4 Coverage Rate (%) (Count)	4:3:1:3:3:1:4 Missed Opportunity (%) (Count)	4:3:1:3:3:1:4 Coverage Rate (%) (Count)	4:3:1:3:3:1:4 Missed Opportunity (%) (Count)
P00178	57% 13/23 Records	17% 4/23 Records	52% 12/23 Records	17% 4/23 Records
P00112	44% 16/36 Records	31% 11/36 Records	46% 16/35 Records	26% 9/35 Records
M82L06	60% 52/87 Records	25% 22/87 Records	51% 44/87 Records	36% 31/87 Records
M45X04	67% 109/163 Records	14% 23/163 Records	66% 108/163 Records	14% 23/163 Records
M01S01	70% 68/97 Records	12% 12/97 Records	70% 67/96 Records	14% 13/96 Records

ROUND 2 RESULTS

(ADOLESCENT 1 Tdap)

VFC PIN	CoCASA		SMaRT AFIX	
	Tdap Coverage (%) (Count)	Tdap Missed (%) (Count)	Tdap Coverage (%) (Count)	Tdap Missed (%) (Count)
P00178	70% 233/334 Records	1% 2/334 Records	69% 228/330 Records	4% 14/330 Records
P00112	71% 519/732 Records	2% 11/732 Records	72% 526/732 Records	4% 26/732 Records
M82L06	89% 243/273 Records	9% 25/273 Records	90% 245/273 Records	3% 9/273 Records
M45X04	89% 542/610 Records	5% 31/610 Records	89% 542/608 Records	4% 26/608 Records
M01S01	89% 158/177 Records	8% 14/177 Records	92% 162/176 Records	5% 9/176 Records

ROUND 2 RESULTS

(ADOLESCENT 1 Tdap)

VFC PIN	CoCASA		SMaRT AFIX	
	Tdap Coverage (%) (Count)	Tdap Missed (%) (Count)	Tdap Coverage (%) (Count)	Tdap Missed (%) (Count)
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P00112	71% 519/732 Records	2% 11/732 Records	72% 526/732 Records	4% 26/732 Records
M82L06	89% 243/273 Records	9% 25/273 Records	90% 245/273 Records	3% 9/273 Records
M45X04	89% 542/610 Records	5% 31/610 Records	89% 542/608 Records	4% 26/608 Records
M01S01	89% 158/177 Records	8% 14/177 Records	92% 162/176 Records	5% 9/176 Records

Adolescent 1 Tdap – Findings

- All n=9 patients included in the Missed Opportunity Patient List (SMaRT) were validated based on patients vaccination records in Indiana's IIS/CHIRP Prod.



Adolescent 1 Tdap – Findings

- Of the n=25 patients listed in the CoCASA report, n=16 patients were identified as being included in the Cohort List (SMaRT AFIX) but NOT listed in the Missed Opportunity Patient List (SMaRT AFIX).
 - Of those n=16 patients, n=14 were all of the following:
 - Correctly listed in CoCASA as a missed opportunity based on the patient record in Indiana's IIS/CHIRP Prod, AND
 - Correctly forecast in Indiana's IIS/CHIRP Prod to receive a dose of Tdap

Adolescent 1 Tdap – Findings

Findings (*continue*): Of those n=16 patients, n=2 were correctly not listed as a missed opportunity for 1 Tdap due to ACIP special considerations

- Indiana's IIS/CHIRP correctly did not forecast for both patients to receive a dose of Tdap.

Adolescent 1 Tdap – Recommendations

Follow-up: Forward test results to AFIX-IIS and STC to identify why select patients (n=14) forecast in iWeb/CHIRP to receive a dose of Tdap and correctly listed in CoCASA reports are not included in the Missed Opportunity Patient List (SMaRT AFIX).

Recommendations: Conduct additional testing to ensure all patients missing a dose of Tdap are captured by SMaRT AFIX.

ROUND 2 RESULTS

(ADOLESCENT UTD HPV)

VFC PIN	CoCASA		SMaRT AFIX	
	HPV Coverage (%) (Count)	HPV Missed (%) (Count)	HPV Coverage (%) (Count)	HPV Missed (%) (Count)
P00178	5% 17/334 Records	60% 202/334 Records	5% 17/330 Records	61% 202/330 Records
P00112	10% 76/732 Records	53% 391/732 Records	11% 78/732 Records	51% 372/732 Records
M82L06	45% 122/273 Records	26% 71/273 Records	46% 126/273 Records	28% 77/273 Records
M45X04	56% 344/610 Records	16% 96/610 Records	58% 351/608 Records	16% 100/608 Records
M01S01	27% 47/177 Records	50% 88/177 Records	27% 48/176 Records	52% 92/176 Records

STEP 5: CUSTOM TEST SCENARIOS

Goal: To learn how SMaRT AFIX will capture patients who do or do not have administered or historical reported doses outside of the ACIP recommended ages and interval in Indiana's IIS/CHIRP for select doses

Methods: Additional n=5 new test (*n=3 childhood; n=2 adolescent*) scenarios were created to highlight examples of when CDC's CoCASA logic and forecasting does NOT align with CDSi and IIS/CHIRP forecasting.

CUSTOM TEST PATIENT EXAMPLE

	A	B	C	D	E	F	G	H	I	J	K
1	Patient Name	SIIS	DOB	Childhood or Adolescent	Antigens/Series	Dose	Calendar Date	Conclusions/Results	Last Immunization Visit	Pass/Fail	Follow-up
2	Patient A1	9797366	7/1/2015	Childhood	Hep B, adolescent or pediatric	1	7/1/2015	UTD	2/1/2017	Y	
3						2	9/1/2015				
4						3	2/1/2016				
5					RV, pentavalent	1	9/1/2015	Patient will (1) not be UTD. RV-3 will not be listed as a missed opportunity due to patient aged out of ACIP recommendations and vaccine licensing.		N	Listed as a missed opportunity. Patient has aged out of ACIP recommendation and vaccine licensing.
6						2	11/1/2015				
7						3	No Record				
8					DTaP	1	9/1/2015	The minimal age for DTaP-4 (15 months) and the minimal 6 month interval was not meet; therefore, DTaP-4 is invalid. Based on AFIX methodology, this patient (1) will not be UTD, (2) will be listed as a missed opportunity, and (3) DTaP-4 will be included in the invalid doses list.		Y	
9						2	11/1/2015				
10						3	1/1/2016				
11						4	6/1/2016				
12					Hib (PRP-T)	1	9/1/2015	UTD		Y	
13						2	11/1/2015				
14						3	8/1/2016				
15					Pneumococcal conjugate PCV13	1	9/1/2015	UTD		Y	
16						2	11/1/2015				
17						3	2/1/2016				
18						4	8/1/2016				
22					Influenza, injectable, quadrivalent					1	2/1/2016
23	1	7/1/2016	UTD	Y							
24	1	8/1/2016	UTD	Y							
25	Hep A, ped adol, 2 c	1	8/1/2016	UTD					Y		
26		2	2/1/2016								

A	B	C	D	E	F	G	H	I	J
Patient A1	9797366	7/1/2015	Childhood	Hep B, adolescent or pediatric	1	7/1/2015	UTD		Y
					2	9/1/2015			
					3	2/1/2016			
				RV, pentavalent	1	9/1/2015	Patient will (1) not be UTD. RV-3 will not be listed as a missed opportunity due to patient aged out of ACIP recommendations and vaccine licensing.		N
					2	11/1/2015			
					3	No Record			
				DTaP	1	9/1/2015	The minimal age for DTaP-4 (15 months) and the minimal 6 month interval was not meet; therefore, DTaP-4 is invalid. Based on AFIX methodology, this patient (1) will not be UTD, (2) will be listed as a missed opportunity, and (3) DTaP-4 will be included in the invalid doses list.		Y
					2	11/1/2015			
					3	1/1/2016			
					4	6/1/2016			



N	Listed as a missed opportunity. Patient has aged out of ACIP recommendation and vaccine licensing.
Y	Patient correctly listed as not UTD and DTaP-4 is listed as a missed opportunity.

STEP 5: COMPLETE CUSTOM TEST SCRIPTS (RESULTS)

Results: SMaRT AFIX results aligned more closely with CDSi and II/CHIRP forecasting. Indiana identified the following :

- Rotavirus Missed Opportunity – Patients who aged out of the ACIP age recommendation and vaccine licensing are still included in the Missed Opportunity Patient List (SMaRT AFIX).
- Unspecified Formulations – Patients who have a reported historical dose of unspecified doses for Hib and Meningococcal are listed as UTD.
 - According to the CDC, this is **CORRECT**. To align SMaRT AFIX logic and forecasting with CDSi, unspecified formulations will be counted as valid in SMaRT AFIX.

STEP 6: NEXT STEPS & RECOMMENDATIONS

- **Next Steps:**

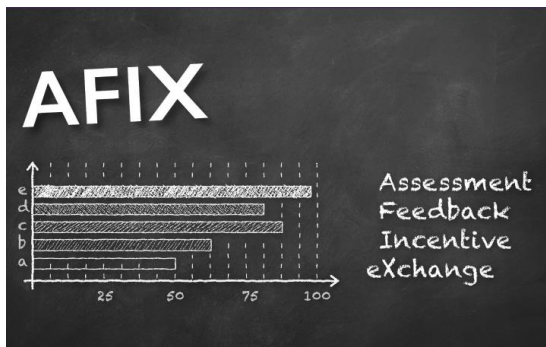
- Conduct additional testing in SMaRT AFIX Prod following upcoming STC releases to correct any functionality, logic or forecasting issues .
- Interest in AFIX-IIS Phase 2 (TBA)

- **Future Recommendations:**

- Include facility-level coverage rates with the custom patient lists
- Continue to enhance the functionality of SMaRT AFIX application

FUTURE MILESTONES

- **Single Sign-On (SSO):**
 - Anticipate “Go-Live” Date: September 2018
 - Future Steps: Testing to be completed prior to launch
- **SMaRT AFIX Prod:**
 - Today: Live for internal use and future testing
 - For AFIX program purposes : October 2018
 - Provider trainings to generate facility-level AFIX and custom assessments (Sep/Oct-2018)



QUESTIONS?

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IIS and IQIP

August 16, 2018

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