



Data Modernization Roadmap

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Learning Objectives

- Know the definitions of terminology used when creating strategic plans and roadmaps
- Understand the components of a strategic plan and roadmap
- Be able to assess the current situation and systems by using tools such as a SWOT and other fact finding tools
- Know the fundamentals of creating a strategic plan and roadmap

Acknowledgements

Some of the tools I will be showing have been created by:

- ASTHO
- Minnesota Department of Health
- PHII

Introductions



Sedgwick County

Real life example



SEDGWICK COUNTY
Health Department



Acknowledgements

Project Team:

Sedgwick County Health Dept (SCHD)

- Christine Steward, Deputy Director
- Blake Strahl, Health IT Manager

Sedgwick County Information Technology

- Greg Gann, Deputy Director
- Laura Hadley, Project Manager
- Matthew Hair, Principal Developer
- Jaymar Frace, Enterprise Developer

HLN Consulting

- Aasa Dahlberg Schmit
- Tony Diiorio
- Mike Berry
- Kenneth Hughes



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Health Department

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Sedgwick County

- Second most populous county in Kansas with a population of 523,824 (2020 Census)
- Wichita is the county seat and largest city, with 80% of the county population residing in the metro area.



SEDGWICK COUNTY
Health Department



Sedgwick County Health Department (SCHD)

- **Mission:** To improve the health of Sedgwick County residents by preventing disease, promoting wellness, and protecting the public from health threats.
- About 140 Full-time Equivalents (FTEs)
- **Services:**
 - Epidemiology/Disease Investigation
 - Family Planning
 - Immunizations
 - Laboratory
 - Sexually Transmitted Infection (STI) Testing and Treatment
 - Tuberculosis Control
 - And more



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Health Department



“It’s Okay”

Like other health departments, we are:

- Too adaptable
- Trapped in the same routines
- Not efficient
- Limited



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Health Department

It is not Okay.

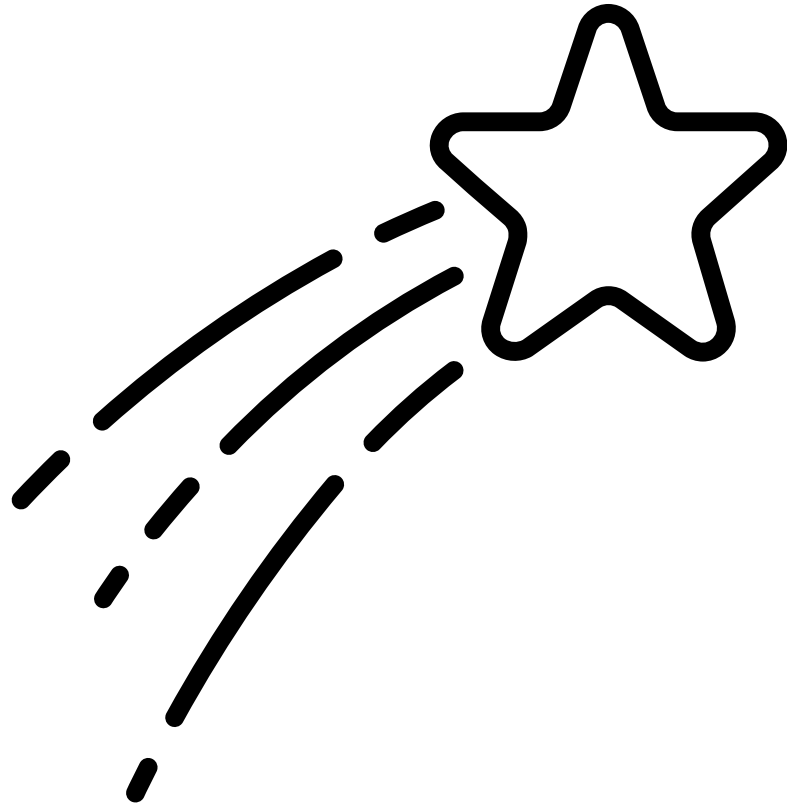
We can:

- Work better
- Offer the tech that clients expect
- Embrace efficiency
- Be more strategic
- Do more for our communities:
 - Serve more, connect more
 - Change systems

Interoperability is the key



Project Sparks and Perfect Star Alignment



- ★ Epidemiology/laboratory
- ★ Health Information Exchange
- ★ Informatics groups/training
- ★ COVID-19
- ★ Electronic health record
- ★ Health IT staffing
- ★ Leadership buy in
- ★ Public Health FHIR Playbook
- ★ PH Infrastructure Grant (PHIG)



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Project Objectives

- ★ Identify opportunities for improved IOP using FHIR
- ★ Reduce manual processes and duplicate data entry
- ★ Determine a strategy to a future state of IOP
- ★ Learn skills and processes to sustain IOP internally post-contract



Moving from Idea to Implementation

INITIATION

January – June 2024



SCHD Prep & Request for Proposal

- Used PHIG funding
 - Selected HLN
- Consulting for contract:
Jun. 2024 - Dec. 2025

PLANNING

June – December 2024



Assessment of Systems

- Identified 62 'systems' with limited IOP & FHIR readiness
- Data entry redundancy

IMPLEMENTATION

January – December 2025



Pilot Projects

- Focused on implementing and sustaining IOP
- Included:
 - Future state
 - Pilot projects
 - Staff training
 - Data governance
- Provided hands on experience
- Involved external partners



Project Initiation

SCHD Preparation

- ★ PHIG Grant Application
- ★ New position (PHIG funding):
 - “Enterprise Developer for Health Interoperability”
- ★ County IT conversations & planning
- ★ Assessment of systems planning & implementation started

Request for Proposal

- ★ Public Health FHIR Playbook helpful
- ★ Funding, timeline, & pilot project were “guesstimations”



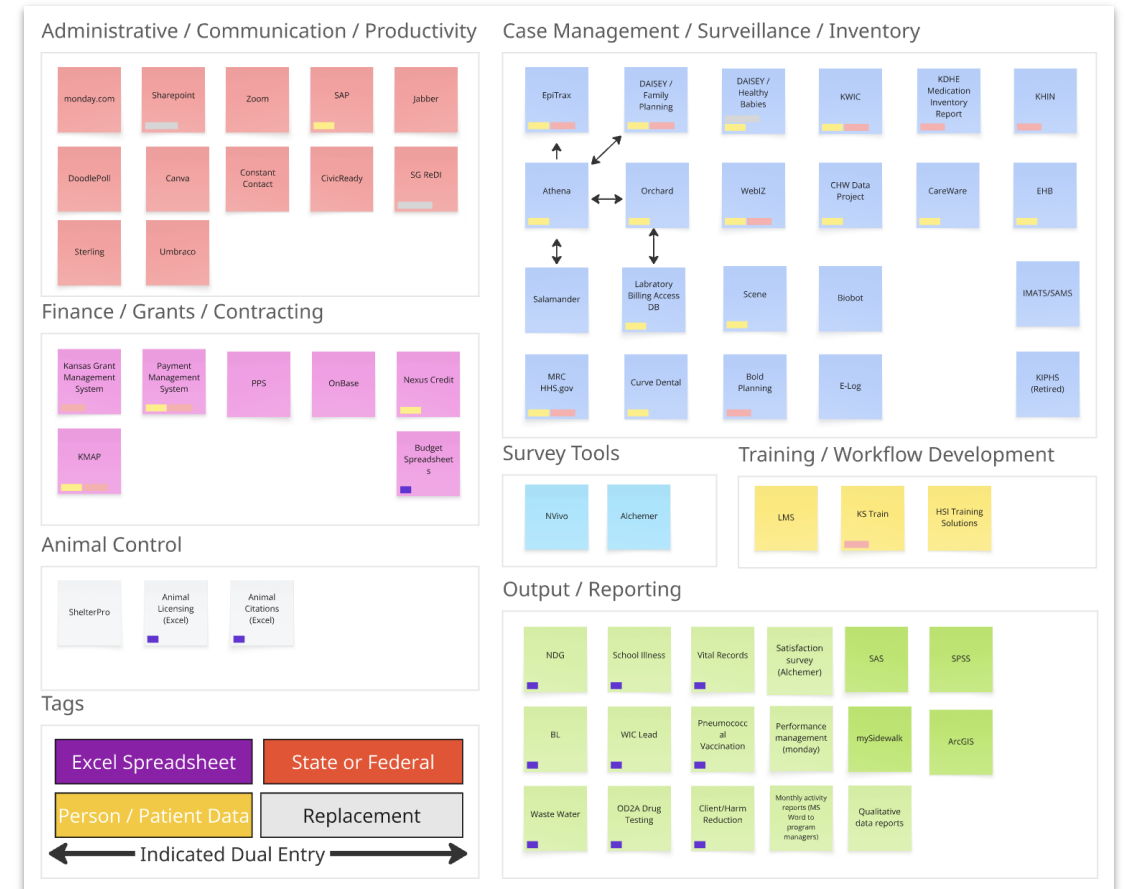
Planning: Assessment of Systems

Work Performed:

- ★ Assessed 62 'systems' in use by SCHD
- ★ Determined dataset alignment with FHIR resources
- ★ Investigated readiness for implementing FHIR and technologies to support FHIR transactions

Key Findings:

- ★ Numerous data entry redundancy identified
- ★ Unrealized capability for interoperability and FHIR capability and/or feasibility



Foundational Plans

Interoperability Plan

- Key assessment results
- Strategy for future state
- Project phases and timelines

Staff Training Plan

- Organized by level and role
- Focus on FHIR
- Data governance

Data Governance Roadmap

- Structure
- Charter
- Yearly milestones & goals



Pilot Projects



Adoption of eCR Now

- Work with CDC, APHL, & KDHE
- Staff access to Athena FHIR server
- Goal: Athena EHR case report data sent to KDHE EpiTrax



Improve vaccine inventory tracking

- Vendor, then in-house application
- Goal: Athena connects to data store/interface.



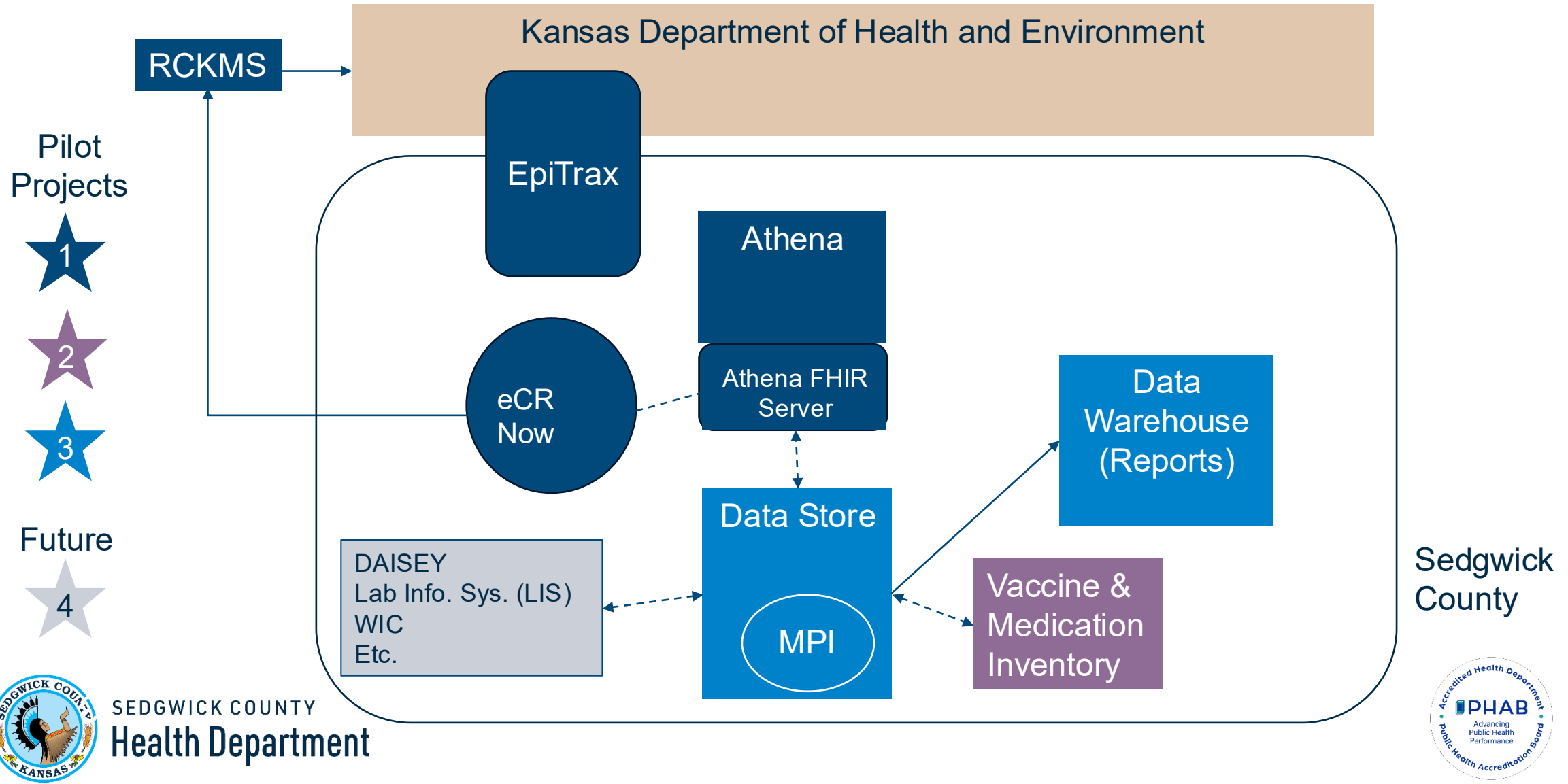
Create data store / interface

- Master person index
- Goal: Connect with all SCHD systems & data warehouse (for reporting)

All are in progress



SCHD Interoperability Future State



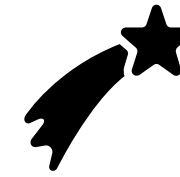
Practical Findings

Successes



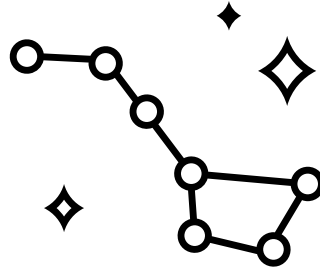
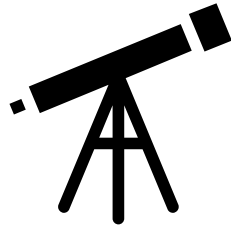
- ★ Funding was less restrictive
- ★ RFP worked beautifully
- ★ Right staff at right time
- ★ Vendor with experience
- ★ IOP strategy tailored to SCHD
- ★ Skills learned for sustainability

Challenges



- ★ Timeline alignment
- ★ Pilot projects changed
- ★ Limited funding amount
- ★ Mapping of fields
- ★ Developer vs. public health language
- ★ User interface





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Health Department



The Importance of a good plan

- Get everyone on the same page
- Be able to define and scope the work
- Once we have a plan, we can measure progress
- Useful for communication
- Change management

Definitions

Vision

Why are we doing this work? What are our ultimate end goal?

Strategic Priority

Strategic Priority

What and Why (Eagle)

Strategic Objective

Strategic Objective

What, with more details (Pidgeon)

Activity

Activity

How and When (Kiwi)

Building a plan



Fact Finding – inputs to your plan

- Don't over complicated it
- Find already completed assessments and documentation
- Decide what you are assessing and how much
- Align “what” with “how” (the tools you use will depend on what information you are looking for)

Fact Finding - Useful tools

- Maturity models
- Program Overview Template
- Data System Template
- Detailed fact finding (Interviews, surveys, reading system documentation etc)
- Assessment worksheets
- SWOT

Maturity Models

A maturity model is a strategic framework to assess current capabilities, highlight critical gaps, and chart a deliberate path toward excellence. It acts as a compass to direct change and measure progress.

A maturity model can identify weaknesses and areas where improvements are needed

Program and System Summaries

- Program Summary

- Data Resources/Data Systems
- Data Needs and data challenges
- Options and opportunities to consider
- What are the unknowns or uncertainties

- System Summary

- Data System
- Vendor
- Description
- What is the data used for
- Who is using the system
- Who manages, builds and support the system
- Is the data exchanged with anyone and how
- How is the data managed
- Data analysis
- Unknowns and uncertainties

System Assessment worksheet

A Data System Name	C Primary Business Purpose	H System Purpose and Description	I Owning Division	J Program / unit	K Data Sets included	L Data Steward(s)
Name of the System	Example: Surveillance, Health Care Delivery, Environmental protection, License or Permits, Registry	Short description of what the system is used for	Name of the division who owns the System	Name of the program and/or unit within the Division	Example: Person/Client, Hospitals, Daycares, Vaccinations, Providers, Infectious disease cases, Cancers, New born screening lab results, home visits	Name of the Data Steward(s) of the data in the system
Syndromic Surveillance	Surveillance	Early event detection and situational awareness. Data received from emergency departments and poison control. Subset of data is submitted to CDCs bioSense program on a daily basis.	Infectious Disease Epidemiology, Prevention & Control	n/a	Syndromic Surveillance Records	Last Name, First Name
Laboratory Information System (LIMS)	Lab tests and results	Lab test sample accessioning and order entry, results archival and result delivery. Lab test result entry and verification. Lab instrument interfaces, HL7 messaging to CDC.	Public Health Laboratory			Last Name, First Name
Data Exchange, Rhapsody	Data Messaging	Receiving data from external partners, perform validation and translate	IT		Lab reports (ELR), Case Reports (eCR)	Last Name, First Name

SWOT Analysis

The Good

The Not so good

Internal

Strengths

What are our advantages?
What are we doing well?
What's unique about us?

Weaknesses

What abilities are we lacking?
Where are we not doing so well?
What do we struggle with?
What can we improve?

External

Opportunities

What's could be coming our way?
What can we take advantage of?
What opportunities for us exist?

Threats

How could our weaknesses leave us vulnerable?
What could negatively impact our work?

Exercise: Using the SWOT

Think about the DM Project you are involved in

- In groups fill out the SWOT worksheet (10 min)
- Report out to the whole group

It's ok if you are not working on the same project, create the combined SWOT across the group.

SWOT Analysis

Strengths	Weaknesses
Opportunities	Threats

Example from Sedgwick County

Fact Finding

- Created a list of all systems
- Identified which systems we should collect more info about
- Created questions for interviews
- Interviewed key SMEs for each system
- Interviewed stakeholders
- Mapped it all out

Plan creation

- Identified use cases for the pilot based on findings
- Reviewed cycles of the use cases
- Created draft plan
- Reviewed cycles

Example from Sedgwick County

HLN Consulting

Questions

Background

How old is the system?

What is the current volume of data (records) in the system?

How often is the data updated in the system?

Does the system contain PHI?

Does the system have external users?

How many users access the system, both external and internal?

How and where is the system hosted and implemented?

How does the system store data?

Is the system vendor supported? Identify vendor if so.

Is the system being continuously updated and improved?

Can the system no longer be updated due to old language or technology?

Technology and Protocols

What is the underlying technology stack for the system?

Does the system have API access/capability?

Does the system have the capability to electronically exchange data with your external partners?

Please note the external partners with whom you exchange data.

Does the system have the capability to electronically exchange data internally?

Please note the programs with whom you exchange data.

What kind of security model does the system employ?

Does the system currently use standard vocabularies for clinical terms or classifications (e.g., LOINC, SNOMED-CT, ICD-10)?

Does the system currently use message/content standards for health information (e.g., HL7 version 2.x, Clinical Document Architecture, etc.)?

Does the system currently use standard message services/transport methods for electronic health information (e.g., Secure FTP, Direct, Web services, PHIN MS, NwHIN)?

Interoperability

Is there a need to combine with other internal systems or stakeholders?

Please note the systems and/or stakeholders.

Is there a need, when sharing data, to have data sharing agreements in place?

1

Question set

	A	B	C	D	E	F	G
1	System	System Type	System Hosting / Source	Owner	Primary Function	Primary Content	Program/Division
2	Monday.com	Web	Cloud	County	Scheduling	Management	IT; PHEP; PHP
3	Zoom	Local	Cloud	County	Meetings	n/a	All
4	Learning Management System	Local	Cloud	County	Training	n/a	PHP
5	SharePoint	Web	Cloud	County	Documentation	Various	PHP
6	SAP	Web	Cloud	County	Budget	Financial	PHP
7	Kansas Grants Management System	Web	Cloud	State	Grants	Financial	All
8	Payment Management System	Web	Cloud	Federal/State	Payments	Financial	All
9	PPS	Web	Cloud	County	Purchasing	Financial	All
10	OnBase	Web	Cloud	County	Contracts	Financial	Admin
11	ShelterPro	Local	OnPrem	County	Billing	Financial	Animal Control
12	NVivo	Local	Local/Network	County	Data Collection	Surveys	PHP
13	Sharepoint Community Health Worker	Web	OnPrem	County	Documentation	n/a	PHP
14	EpiTrax	Web	Cloud	State	Case Management	Surveillance	EPI; TB; DIS
15	SPSS Statistics	Local	Local/Network	County	Data Analysis	Various	PHP; EPI; Outreach; MCH
16	Constant Contact	Web	Cloud	County	Communication	Newletter	EPI; Comms; PHEP
17	Scene	Web	Cloud	County	Case Management	Surveillance	TB
18	Canva	Web	Cloud	County	Communication	Flyers	PHP
19	SAS	Local	Local/Network	County	Data Analysis	Surveillance	EPI
20	ArcGIS	Local	Local/Cloud	County	Data Analysis	Surveillance	EPI; OD2A
21	mySidewalk	Web	Cloud	County	Reporting	Surveillance	EPI; OD2A; Outreach
22	Alchemer	Web	Cloud	County	Data Collection	Surveillance	EPI; Outreach; PHP; Family
23	BioBot	Web	Cloud	County	Data Analysis	Surveillance	OD2A
24	SharePoint Client Data Tracking	Local	Hosted	County	Case Management	Surveillance	OD2A
25	Salamander	Web	Cloud	County	Inventory	Preparedness	PHEP; IMM
26	KS Train	Web	Cloud	State	Training	n/a	PHEP; MRC; Family
27	CivicReady	Web	Cloud	County	Alerts	Preparedness	PHEP

Inventory and responses

Example from Sedgwick County

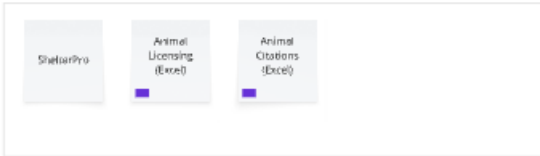
Administrative / Communication / Productivity



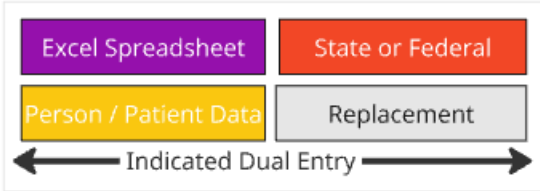
Finance / Grants / Contracting



Animal Control



Tags



Case Management / Surveillance / Inventory



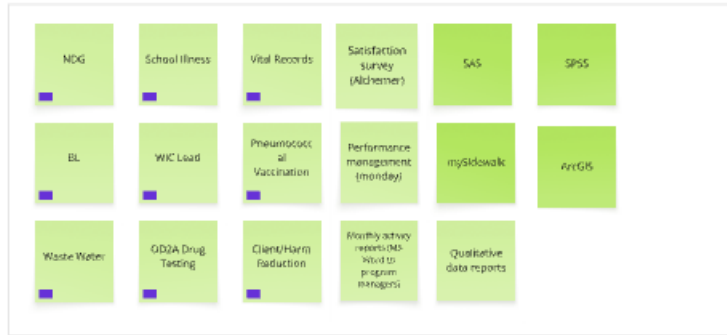
Survey Tools



Training / Workflow Development



Output / Reporting



Map

Creating the plan

- Put everything together
- Collaborative approach
- Build consensus and ownership by the group
- Communicate

Creating the plan - Tools

- Workshops and meetings
- Prioritize the objectives
 - Scoring workbook
 - Individual polling
 - Dot exercise
- Put it all together, review and review again

Example from Sedgwick county

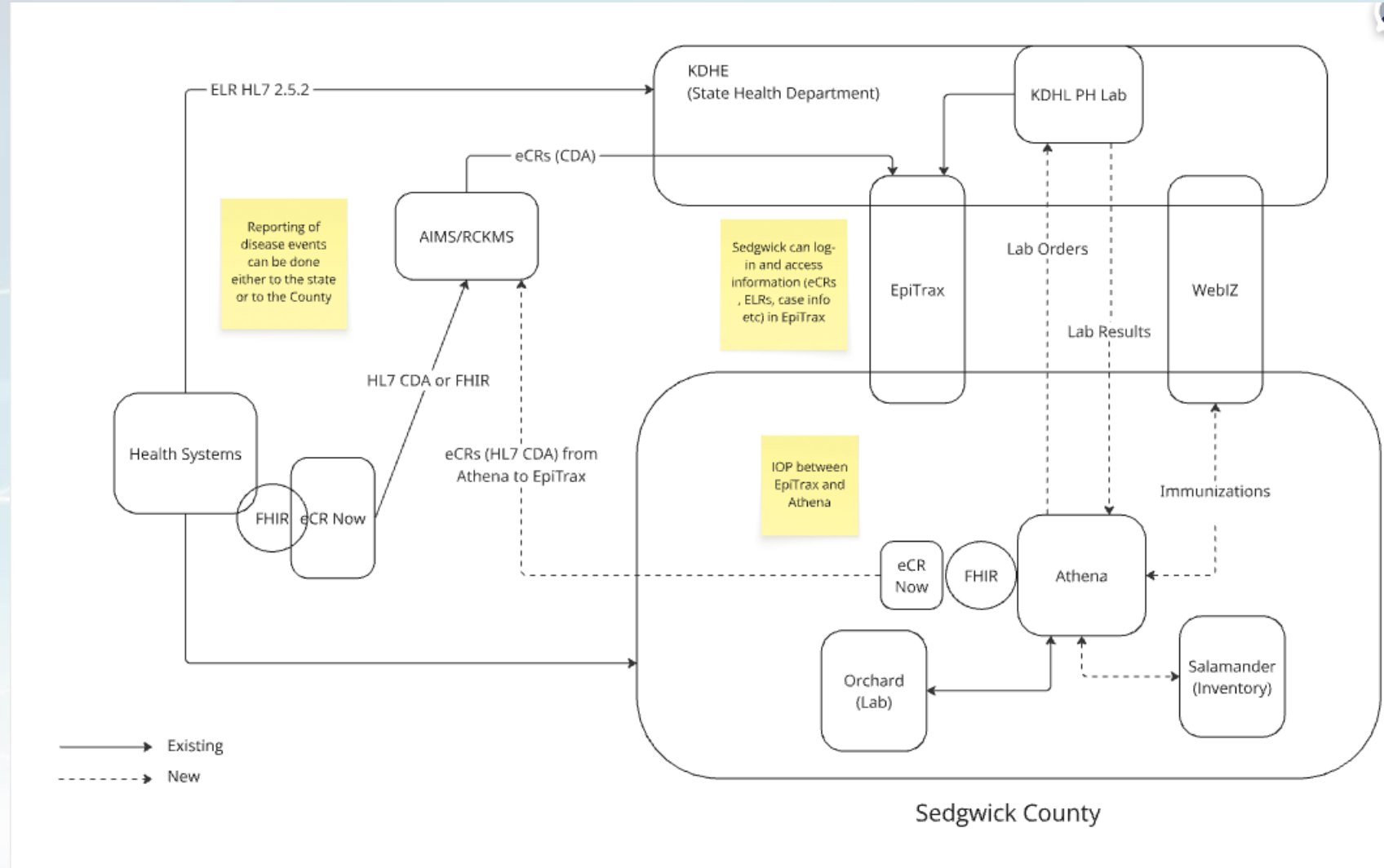
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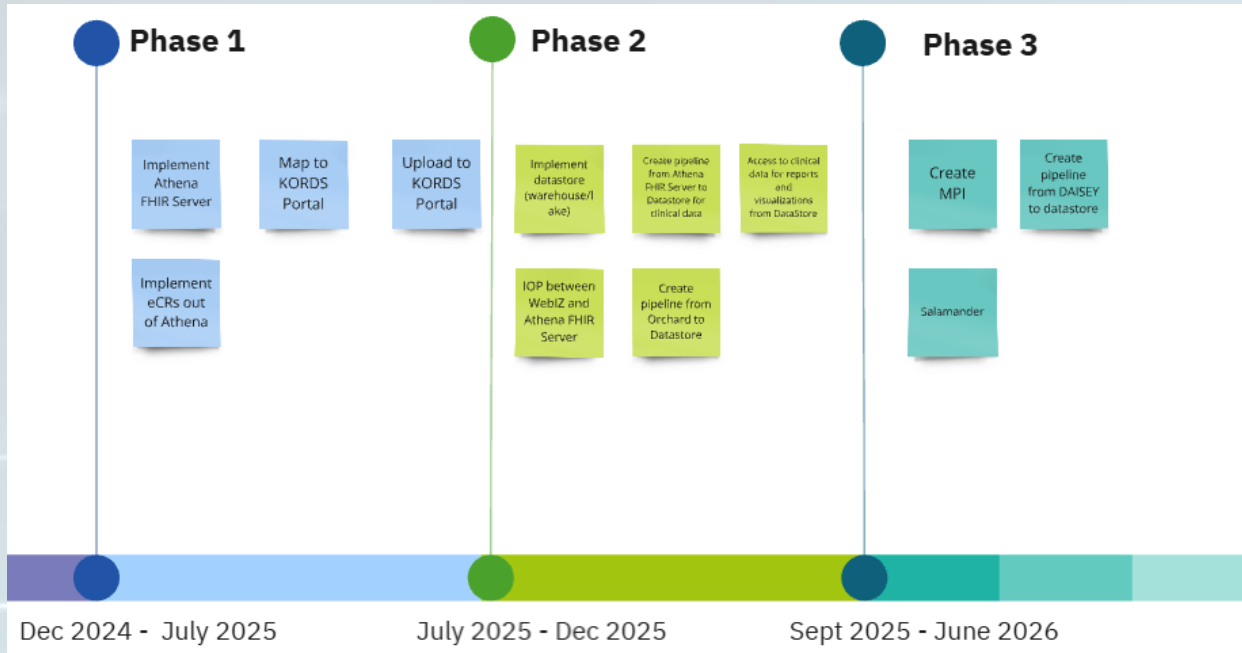
- Identified usecases for the pilot based on findings
- Review cycles of the usecases
- Created draft plan
- Review cycles

Example from Sedgwick County



Pilot Use Cases

Example from Sedgwick county



Phase 1 Action Items

Part 1 - Athena access FHIR API

- Installing the Athena FHIR Server
 - Obtain Access/licensing/cost information
 - Identify query tools and users
 - Install and test query tools

Part 2 - Map to KORDS Portal (KDHE)

- Query reporting from Athena
- Development of translation/extract tool from Athena FHIR Server to Portal
- Map to KORDS Portal Spreadsheet

Part 3 - Upload to KORDS Portal (KDHE)

- Investigation and documentation of KDHE portal environment
- KDHE Soft Launch
- Testing with KDHE
- File Formatting (Processing/Receiving)
- Upload Process

Phase 2 Action Items

- Decide if we are doing warehouse or data lake or a mix
- Create pipeline from Athena FHIR Server to Datastore for clinical data
 - Identify clinical datasets
 - Map datasets to FHIR resources
 - Push into data store
- Access to clinical data for reports and visualizations from data store

- Identify tool to use for reports and visualizations
- Identify datasets (most likely multiple)
 - Prioritize and classify
 - Build reports and visualizations
 - Training

IOP between WebIZ and Athena FHIR server.

- Review/document use cases
- Reach out to KDHE WebIZ team and Envision regarding FHIR pilot opportunity
- Evaluate implementation options (e.g., SMART-on-FHIR app)
 - Implement
- Create pipeline from Orchard to Datastore
 - Identify datasets in Orchard
 - Evaluate API options/feasibility

Phase 3 Action Items

- Master Patient Index (MPI)
 - Evaluate MPI options
 - Implement MPI
- Salamander
 - Review/document use cases
 - Document interoperability requirements
- Create pipeline from DAISEY to datastore
 - Identify datasets in DAISEY
 - Evaluate API options/feasibility

Pilot Use Cases

Example from Sedgwick County

Plan

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Summary

- Identify where you want to go (vision)
- Find out where you are (fact finding)
- Determine what's most important for you to get there (Strategic priorities)
- Decide what you need to do (Strategic objectives)
- And how to do it (activities)
- Write it all up into a plan



Questions?

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