September 27, 2023

Challenges adopting new technology:
Learnings from developing an eCR pipeline with Los Angeles County DPH

Skylight

Agenda

- Who we are
- Our work in public health
- Pilot overview
- Pipeline architecture
- Barriers to adoption
- Secret sauce

Skylight

Who we are

Skylight

Skylight is a digital consultancy using design, technology, and procurement to help agencies deliver better public services.

Dan Paseltiner — Data Engineer with ~8 years of experience building software to process and analyze data in the physical sciences, neuroscience, and public health (Maine CDC).

Amrita Bhatti — Product Manager with ~7 years experience navigating highly technical product environments with deep knowledge of agile software development principles and human-centered design.

Our work in public health

We've been a key partner of the CDC in designing the future of the Data Modernization Initiative:

- We're at the forefront of building flexible, interoperable, and sustainable systems for public health.
- We built SimpleReport, a COVID-19 test result reporting tool that's processed over 7 million test results and counting.
- We are the engineers, PM's, and researchers on CDC's PRIME Data Integration Building Blocks (DIBBs) team.

Skylight

Public health data strategy

Skylight

Los Angeles County Department of Health <> Data Integration Building Blocks Pilot

Skylight

Pilot goals

Business

eCR data is available in an easy-to-use format for LAC to conduct meaningful analysis and case investigation

Product

LAC IT has an ingestion pipeline for eCR, ELR and ADT, with the ability clean, transform, and link data, as well as scale with other datastreams

Team

LAC team gains more experience with cloud services and modern development tools

Skylight

Assumptions about LAC

- High technical maturity
- Large public health agency (PHA)
- Well-resourced*

*Relative to other PHAs

Skylight

Challenges working with eCR

- Incoming data often formatted incorrectly and/or missing information
- Cannot easily identify invalid messages
- Many incoming eCR records contain very similar information
- Extracting relevant information from an incoming eCR record is time consuming
- eCR are more complex and information rich than eLR

Skylight

Pilot timeline

Aug 2022	Dec 2022	Jan-May 2023	June-Sep 2023	Oct-Dec 2023
Kick off	**Discovery**	**Alpha product**	**Beta product**	**Learnings**
DIBBs team members visited LAC Department of Health for 2-day pilot kick-off	Held 10 additional discovery interviews with 6 LAC team members	Deployed DIBBs pipeline in LAC's Azure environment and processed sample eCR data	Conducted User Acceptance Testing (UAT) of the pipeline and processed production eCR data in LAC's live environment	Transition LAC from using the pipeline to owning it, developing handoff materials and project findings. Conduct impact analysis.

Skylight

LAC problem statements

What problems surfaced?

- CliniSys does not support eCR data
- Unable to parse eCR data easily in tabular format
- Data ingestion is disparate and siloed across datastreams
- Commercial integration engines are expensive
- Cloud migration is challenging without extensive cloud expertise

Skylight

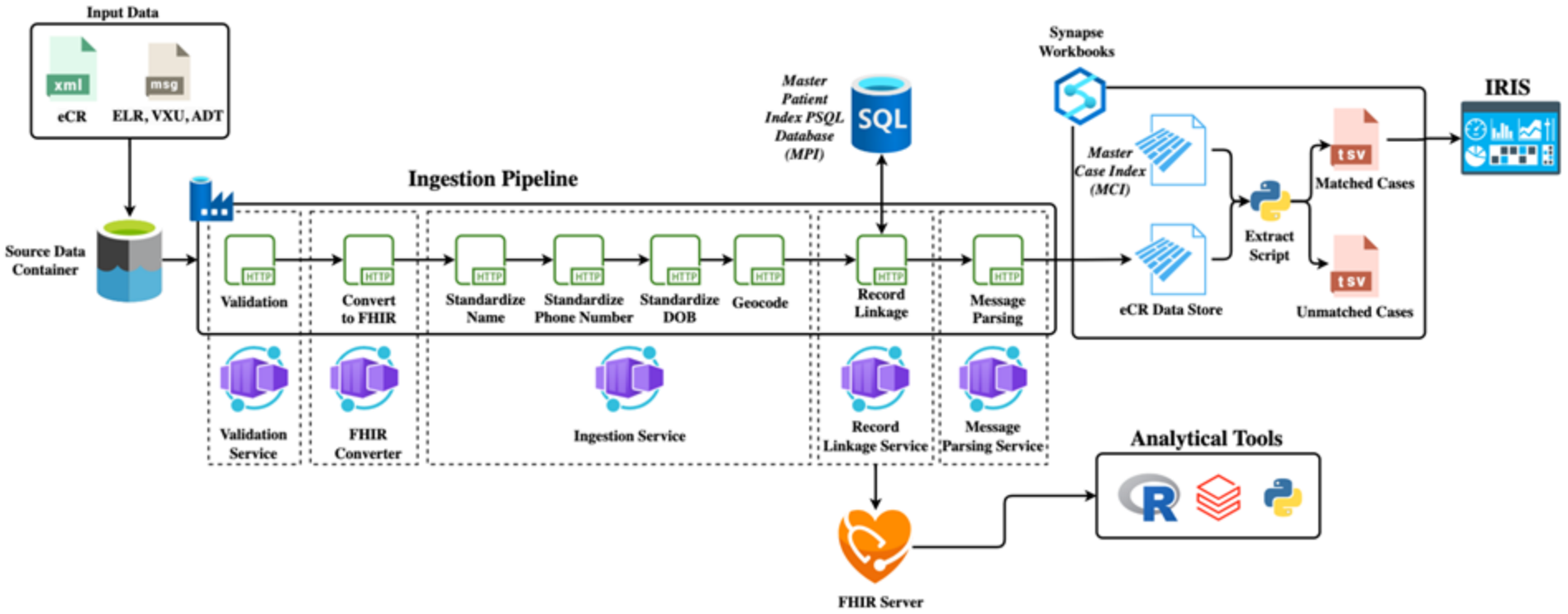
Technical needs met

Skylight

eCR Needs

- ✓ Validate incoming data
- ✓ Enrich through standardization and geocoding
- ✓ Record linkage
- ✓ Flexible parsing based on public health need
- ✓ External data store
- ✓ Transform into a format supported by surveillance system

Pipeline architecture



Expectation…the perfect handoff

Reality…unexpected obstacles

Familiar problems in public health

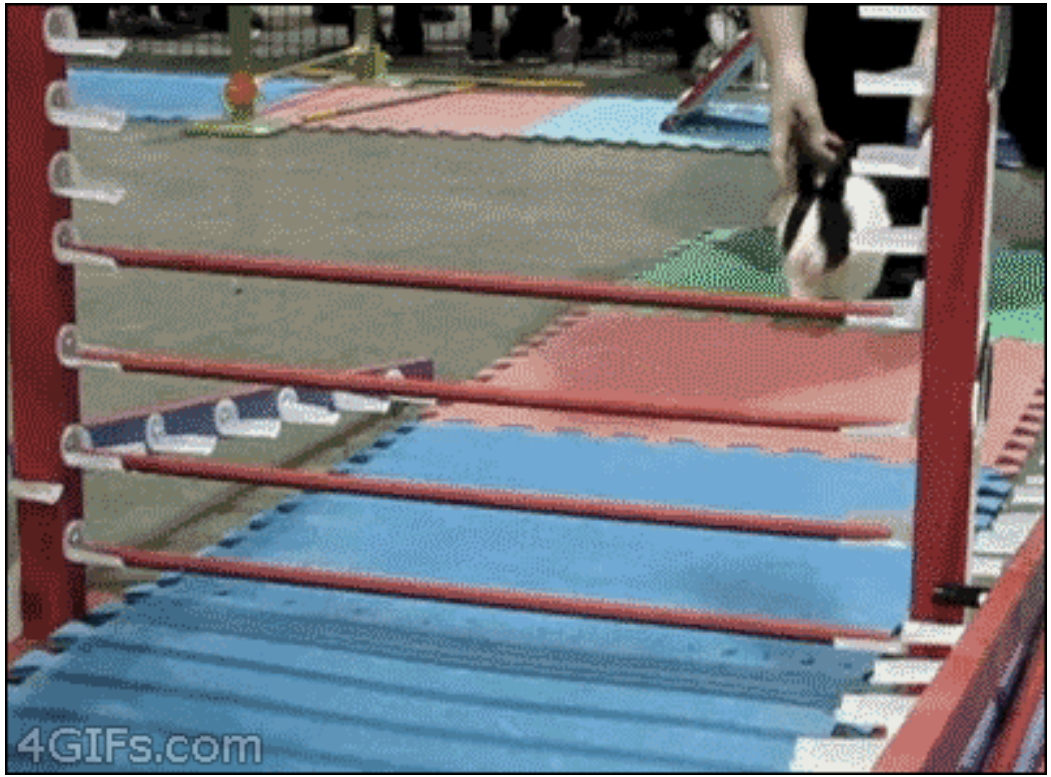
Structural barriers

1. Early in cloud adoption
2. Limited staffing capacity
3. Lack of trust
4. Gap between implementation and ownership

Solutions

1. Invest in jurisdictional cloud hosted services
2. Upskill and hire additional staff
3. Recognize sensitivity of processing public health data
4. Anticipate and plan for the heavy lift of integrating new services

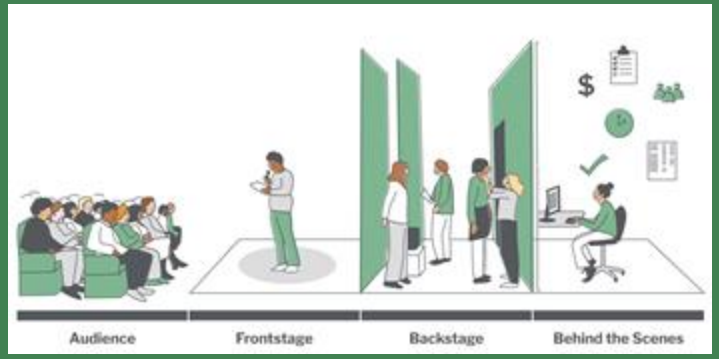
How did we adjust course?



Secret sauce — ABLE

1. **A**pply a service design lens from the start
2. **B**uild enablement into your process
3. **L**everage research-driven design
4. **E**ngage in continuous user testing

Apply a service design lens from the start



- Check your assumptions
- Success of highly technical solutions requires substantial understanding of the entire ecosystem

Skylight

Build enablement into your process

Skylight

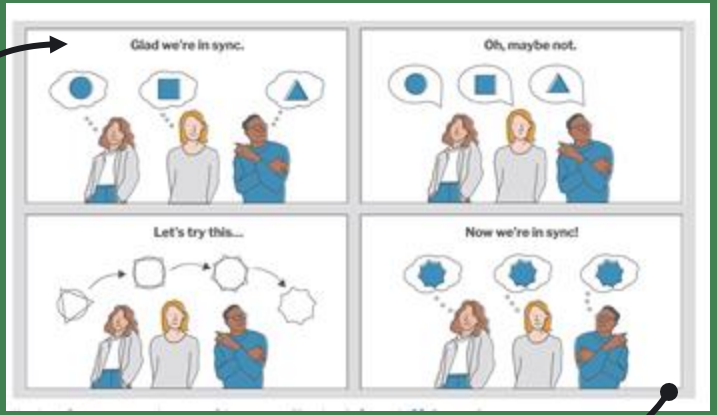
- It’s not enough to just update a jurisdiction on what we’re doing and expect them to use the product at the end
- We brought LAC into our agile ceremonies and held regular product demonstrations

Leverage research-driven design

- User research and design should iterate hand-in-hand with engineering efforts
- Ongoing research is imperative; relying only on initial discovery is insufficient

Skylight

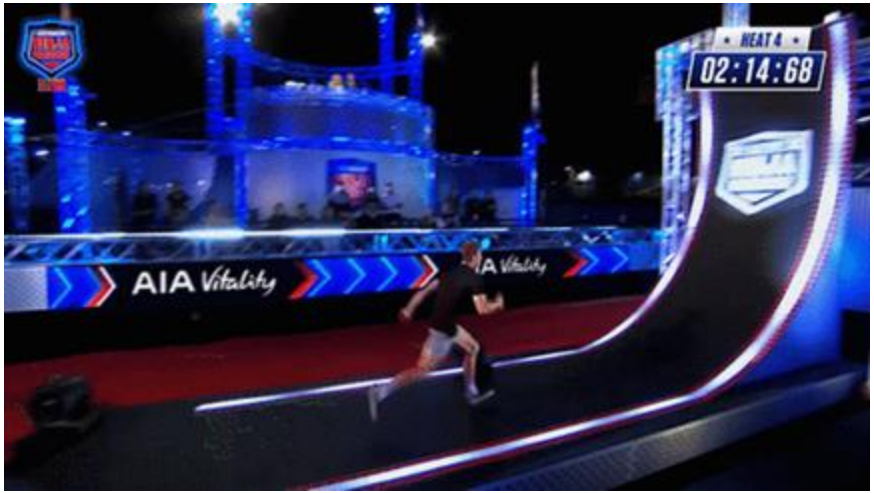
Engage in continuous user testing



- User test everything to make sure the product is easy to use
- User acceptance testing drove all of our handoff materials

Skylight

Better methods = better results



1. **A**pply a service design lens from the start
2. **B**uild enablement into your process
3. **L**everage research-driven design
4. **E**ngage in continuous user testing

Skylight

Thank you

Huge thank you to the Los Angeles County Department of Public Health team who has been astounding to work with!

Skylight


Skylight