



Clinical Archival Strategy

2018 Health IT Expo



Agenda

- Introduction
- Migration vs Archival
- What must be archived?
- How can it be archived?
- Process. Process. Process
- Q & A Session





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10 years of healthcare IT experience

20+ years of software engineering experience

Responsible for design and development of Galen's products and supporting technology, including the VitalCenter Online Archival solution.

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About Galen

2005

FOUNDED IN 2005

Galen has worked with 350+ customers in 46 states since being founded in 2005.



PRODUCTS & SERVICES

We offer professional services, technical and integration services and product technology solutions.

Modern Healthcare

BEST PLACES TO WORK

We've been voted Modern Healthcare's Best Places to work 5 years running (2013-2017).



BEST IN KLAS

#1 HIT Implementation and Staffing 2015/2016
#1 Technical Services 2015/2016



BOSTON

CHICAGO

BURLINGTON

Our Services and Solutions



DATA MIGRATION

Ensure seamless system transition success



INTEGRATION

Health Information Exchange:
Connectivity & Interoperability



EMR OPTIMIZATION

Maximize your Clinical ROI



OPERATIONS SUPPORT

KLAS leading resources
where and when you need them



CLINICAL ARCHIVE

Complete access to legacy data. Anytime, anywhere and in one place

ENTERPRISE DATA MIGRATION

250+

MIGRATION
PROJECTS
COMPLETED

50M+

MIGRATED
PATIENT
RECORDS

15K+

MIGRATED
PROVIDERS

175TB+

MIGRATED
SCANNED
DOCUMENTS



Reliable



Encrypted



Fully Integrated



Single Repository

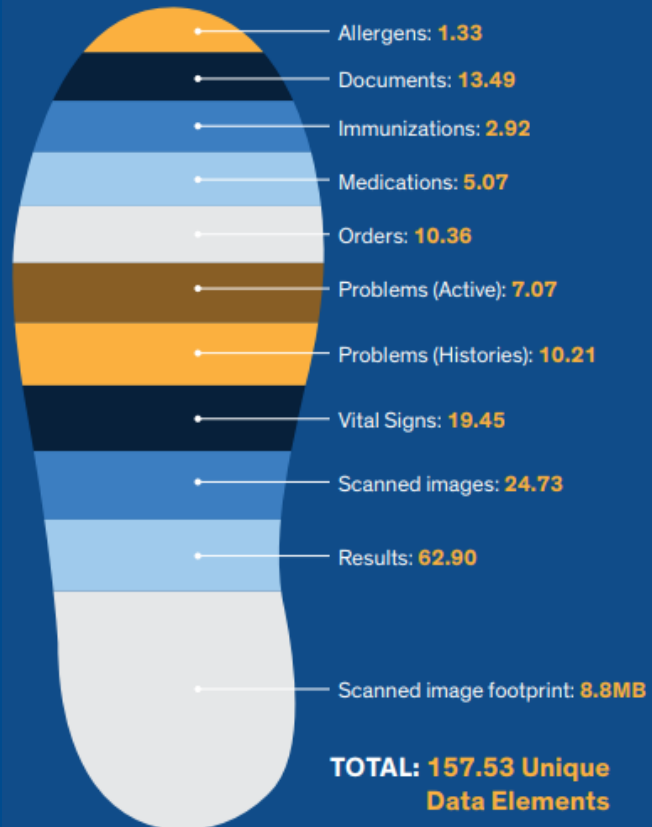
VITALCENTER ONLINE ARCHIVAL

AVERAGE PATIENT DIGITAL FOOTPRINT

Assumptions

6 years of data | **Total population: 165,399**
Average patient age: 49

Clinical Data Elements (Per-Patient Averages)



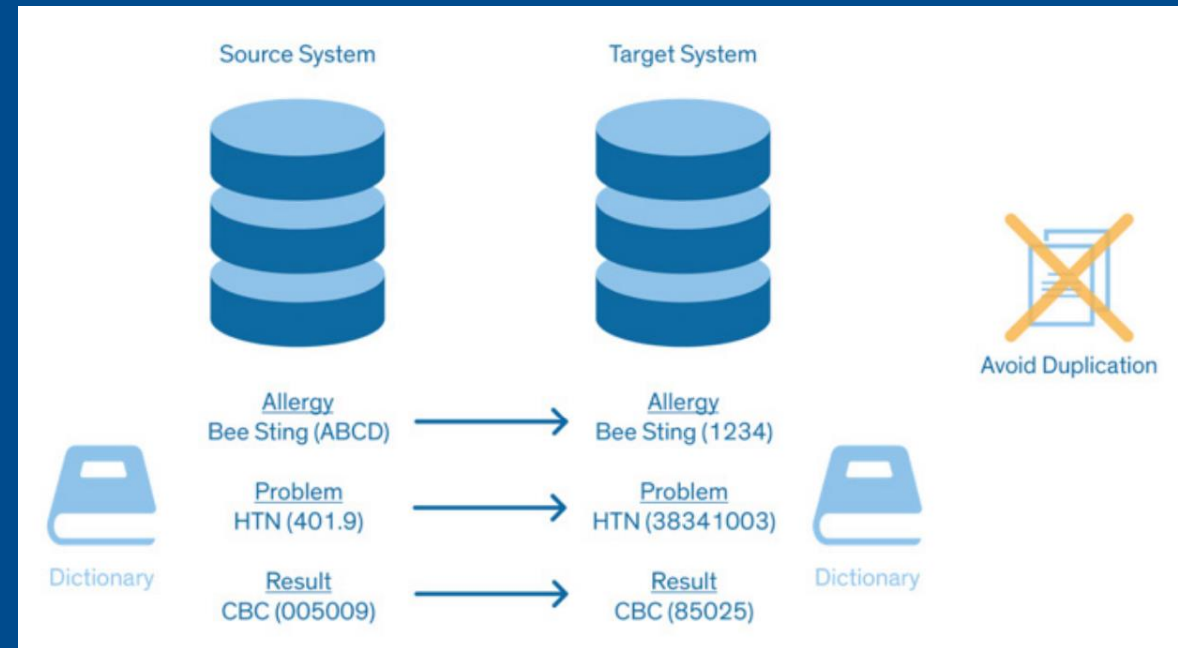
Why Migrate?

- Minimize provider disruption
- Minimize data re-entry cost
- Workflow & automation continuity
- Analytics and CDS systems
- EMRs are not just data entry / storage systems

Factor	Typical Cost
Manual Chart Data Re-entry	\$8 to \$30 per chart ⁱⁱⁱ
Manual Chart Data Re-entry Duration	17 to 64+ minutes per chart ^{iv}
Test Duplication & Treatment Delays	\$1,100 per incident ^v
Incomplete Chart Information	\$96 per patient ^{vi}

Why not *just* migrate?

- Migrations copy *and change* a subset of data
 - Limited by time range (last X years)
 - Limited by data set (problems, meds, etc.)
 - Limited by import mechanism (CCD vs HL7 vs direct database)
 - Limited by level of data fidelity (field/dictionary mapping, data types, versioning, etc.)
- “Dirty” data



What Must Be Archived?

Any information that may have been used to make a **clinical decision** at a particular ***point in time***, as well as **any information** that shows **what and how care was delivered**¹

1 – AHIMA, Fundamentals (<http://library.ahima.org/doc?oid=104008>)

What Must Be Archived?

- Legal Medical Record
 - Data supporting clinical decision making
 - Data documenting care that was delivered
 - *Must* be archived
- Designated Record Set
 - Data not directly related to patient care
 - *Might* need to be archived





What Must Be Archived?

- Commonly missed data sets
 - Contextual audit trails
 - Referenced data in ancillary systems
 - PACS / Lab / Radiology / etc.
 - Document management systems
 - Practice management / revenue cycle systems
 - ERP / HR
 - Paper records
 - **Data change / version history**
 - **Infrequently used / invisible fields**

Field & Data Mapping

Medication Viewer

FOSTER, ALICIA 61 YO F DOB: 31Jan1955 AUDIT 1/6/2010

[Details](#) [Order and Renewal History](#) [Annotations](#) [Education History](#) Previous Next

Fluticasone Propionate 50 MCG/ACT Nasal Suspension (Flonase) USE 2 SPRAYS IN EACH NOSTRIL ONCE DAILY

Rx Date: 06Jan2010 Start Date: 17Dec2008
Dispensed: Days: 30 Qty: 1 (16 GM Bottle) Refill: 0 DAW: N

Status: Active

Ordered by: Maglio, Joseph Expected Action: Evaluate 05Feb2010
Last Updated By: Maglio, Joseph Expires: 06Jan2011
Managed by: Christie, Donna-Marie Authorization: Not Required

For: PMH: Eustachian Tube Block (381.60)

Rx: 54492432
Action: Requested transmission to retail pharmacy:
Pharmacy: CVS Pharmacy # 4201, 2240 E SUNRISE BLVD, voice: (954) 566-8309, fax: (954) 566-4947
Rx Benefit: SURESCRIPTS

Order and Renewal History

All Transactions Displayed.

Row#	Medication	Action	Date	DNFB SIG	Ordered By	Dispense
1	Fluticasone Propionate 50 MCG/ACT Nasal Suspension	Prescribed	06Jan2010	USE 2 SPRAYS IN EACH NOSTRIL ONCE DAILY	Maglio, Joseph	30 Days; #:1 X 16 GM Bottle; Refill:0
2	Fluticasone Propionate 50 MCG/ACT Nasal Suspension	Unauthorized	06Jan2010	USE 2 SPRAYS IN EACH NOSTRIL ONCE DAILY	Christie, Donna-Marie	30 Days; #:1 X 16 GM Bottle; Refill:0
3	Fluticasone Propionate 50 MCG/ACT Nasal Suspension	Completed	17Dec2008	USE 2 SPRAYS IN EACH NOSTRIL ONCE DAILY	Christie, Donna-Marie	30 Days; #:0 X 16 GM Bottle; Refill:0

Annotations

(none)

Education History

There is no education history to display.

Edit Authorize Audit Annotate Fill History

Clinical Data Fields




Partial Version History

"Hidden" Fields

- DocFolderId
- HasSecurityFlag
- OrderItemEXT
- NoteActivityId
- PRNFLAG
- DrugDrugChecked
- Many more...

Related data sets

Why Change Matters

Version	Problem Diagnosis Database Record	
3 (Latest)	<pre>{ "Created": "2006-12-28T09:13:49", "Updated": "2009-04-05T10:04:12", ← Updated "LastUpdatedBy": "MD Howell, Chris", ← Updated "Recorded": "2006-12-28T09:13:49", "OnsetDate": "2009-03-22", ← Updated "Diagnosis": "Myocardial Infarction (lateral wall)", "DiagnosisCode": "I21.29", "View": "Chronic" }</pre>	 "Unsafe" Change
2	<pre>{ "Created": "2006-12-28T09:13:49", "Updated": "2006-12-28T09:13:49", ← Updated "LastUpdatedBy": "MD Smith, John", ← Updated "Recorded": "2006-12-28T09:13:49", "OnsetDate": "2006-11-14", "Diagnosis": "Myocardial Infarction (lateral wall)", "DiagnosisCode": "I21.29", "View": "Chronic" ← Updated }</pre>	 "Safe" Change
1 (First)	<pre>{ "Created": "2006-12-28T09:13:49", "Updated": "2006-12-28T09:13:49", "LastUpdatedBy": "MD Levine, Elizabeth", "Recorded": "2006-12-28T09:13:49", "OnsetDate": "2006-11-14", "Diagnosis": "Myocardial Infarction (lateral wall)", "DiagnosisCode": "I21.29", "View": "Active" }</pre>	 Initial Data Entry



How Long Must Data Be Archived?

- Depends on...
 - Patient Age
 - Historical payers (Medicaid / managed contracts)
 - Acute vs ambulatory care
 - State in which care was delivered
 - Last chart modification or encounter
- State by state rules are largely based on the statute of limitations

How Long Must Data Be Archived?

Location	Medical Doctors	Hospitals		Location	Medical Doctors	Hospitals
Federal (HIPPA Security Rule)	6 Years	6 Years		Missouri	7 Years	10 Years (Age 23)
Federal (CMS / Managed Care)	10 Years	10 Years		Montana	6 Years	10 Years (Age 28)
Alabama	Indefinitely	6 Years (Age 21)		Nebraska	6 Years	10 Years (Age 22)
Alaska	6 Years (Age 21)	6 Years (Age 21)		Nevada	6 Years	6 Years
Arizona	6 Years	6 Years (Age 21)		New Hampshire	7 Years	7 Years (Age 19)
Arkansas	6 Years	10 Years (Age 20)		New Jersey	7 Years	10-20 Years (Age 23)
California	6 Years	7 Years (Age 21)		New Mexico	8 Years (Age 20)	10 Years (Age 19)
Colorado	6 Years	10 Years (Age 28)		New York	6 Years (Age 19)	6 Years (Age 21)
Connecticut	7 Years	10 Years		North Carolina	6 Years	11 Years (Age 30)
Delaware	7 Years	6 Years		North Dakota	6 Years	10 Years (Age 21)
District of Columbia	6 Years (Age 21)	10 Years		Ohio	6 Years	6 Years
Florida	6 Years	7 Years		Oklahoma	6 Years	6 Years (Age 21)
Georgia	10 Years	6 Years (Age 23)		Oregon	6 Years	10 Years - Permanently
Hawaii	7-25 Years (Age 25)	7-25 Years (Age 43)		Pennsylvania	7 Years (Age 21/22)	7 Years (Age 25)
Idaho	6 Years	6 Years		Puerto Rico	6 Years	6 Years
Illinois	6 Years	10 Years		Rhode Island	6 Years	6 Years (Age 23)
Indiana	7 Years	7 Years		South Carolina	10-13 Years	10 Years (Age 19)
Iowa	7 Years (Age 19)	6 Years		South Dakota	6 Years	10 Years (Age 20)
Kansas	10 Years	10 Years (Age 19)		Tennessee	10 Years (Age 19)	10 Years (Age 19)
Kentucky	6 Years	6 Years (Age 21)		Texas	7 Years (Age 21)	10 Years (Age 20)
Louisiana	6 Years	10 Years		Utah	6 Years	7 Years (Age 22)
Maine	6 Years	7 Years (Age 24)		Vermont	6 Years	7 Years (Age 22)
Maryland	6 Years (Age 21)	6 Years (Age 21)		Virginia	6 Years (Age 18)	6 Years (Age 23)
Massachusetts	7 Years (Age 9)	30 Years		Washington	6 Years	10 Years (Age 21)
Michigan	7 Years	7 Years		West Virginia	6 Years	6 Years
Minnesota	6 Years	Permanently		Wisconsin	6 Years	6 Years
Mississippi	6 Years	7-10 Years (Age 25)		Wyoming	6 Years	6 Years



Archival Goals

1. Preserve records with high fidelity to limit liability
2. Enable rapid retrieval of records for both clinical continuity and legal scenarios
3. Reduce cost associated with maintaining legacy systems and data

5 Point Archival Comparison Methodology



Extraction / Load Implementations



Data Visualization Implementations



Data Fidelity

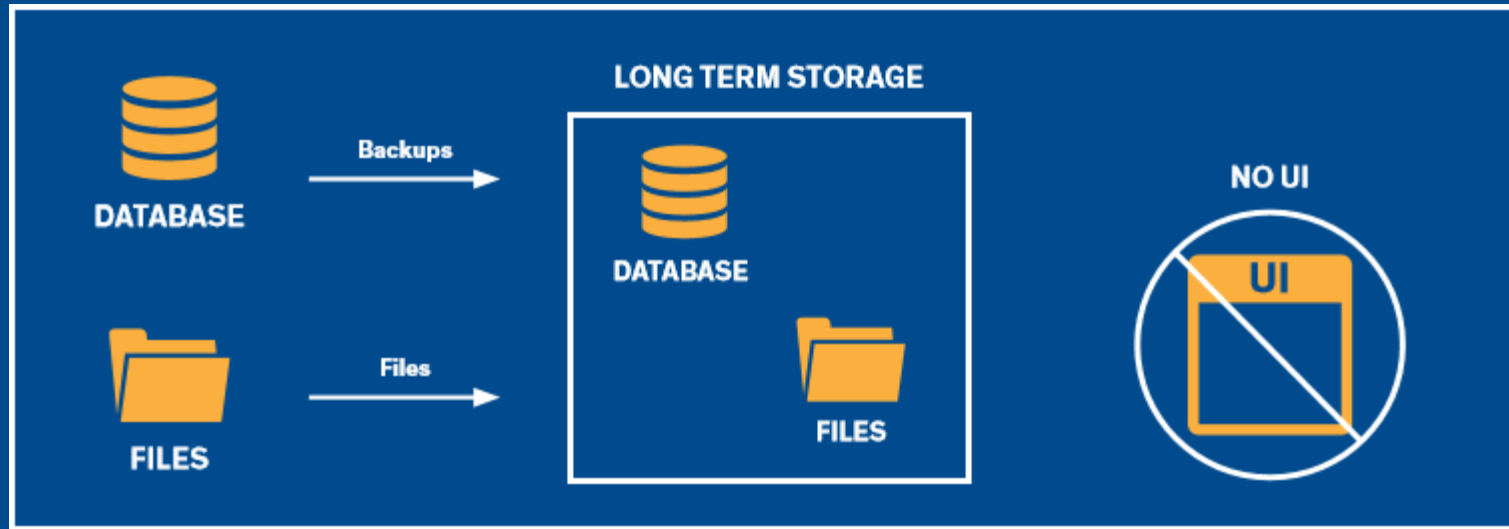


Accessibility (Clinical)

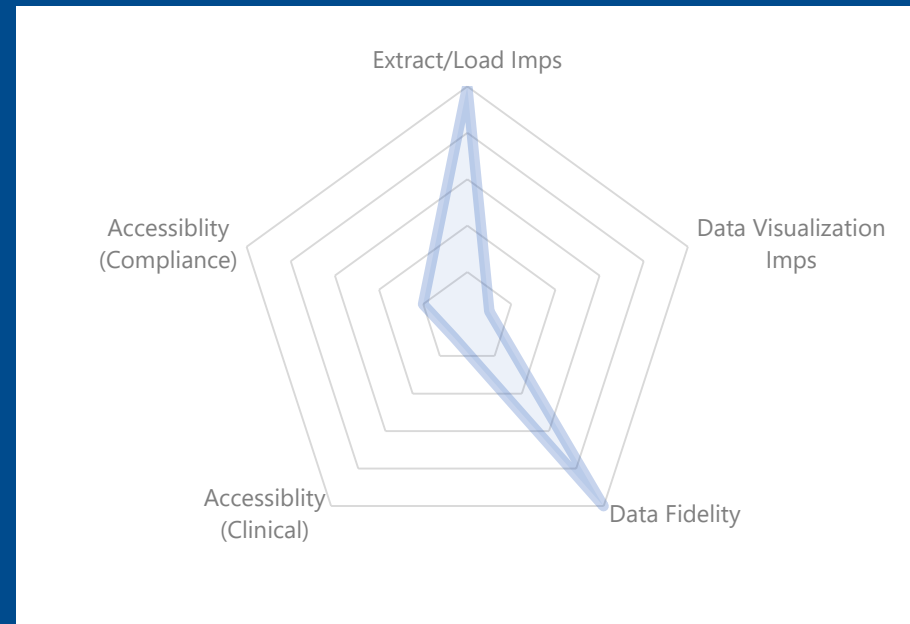


Accessibility (Compliance)

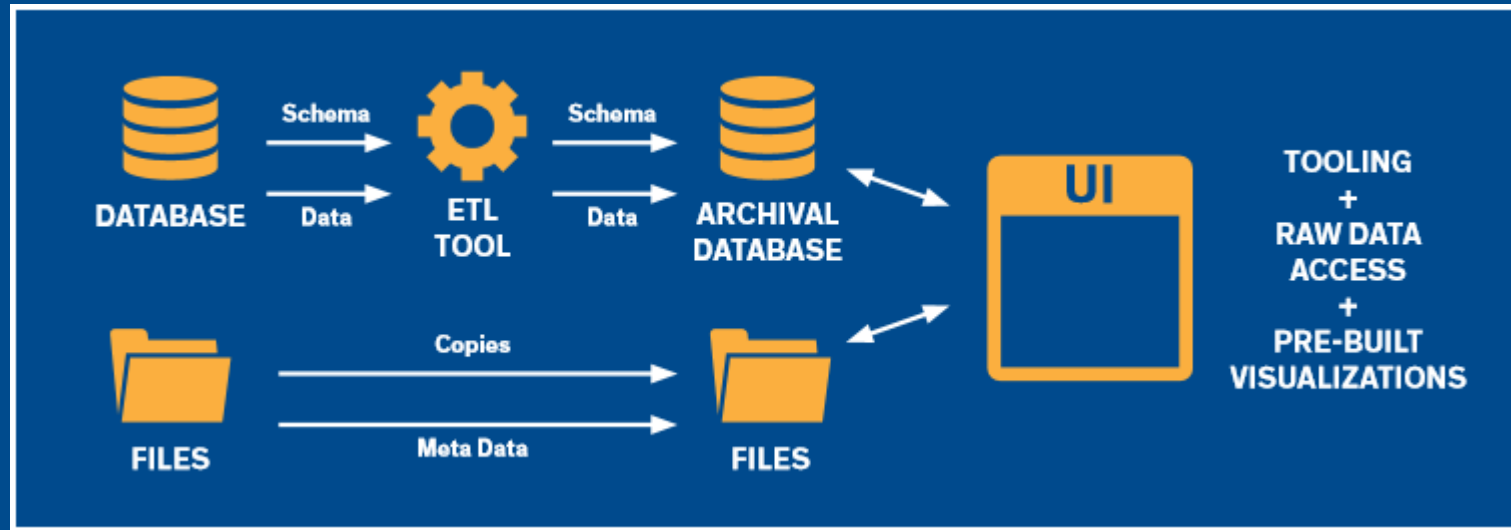
Archival Option: Raw Data Backup



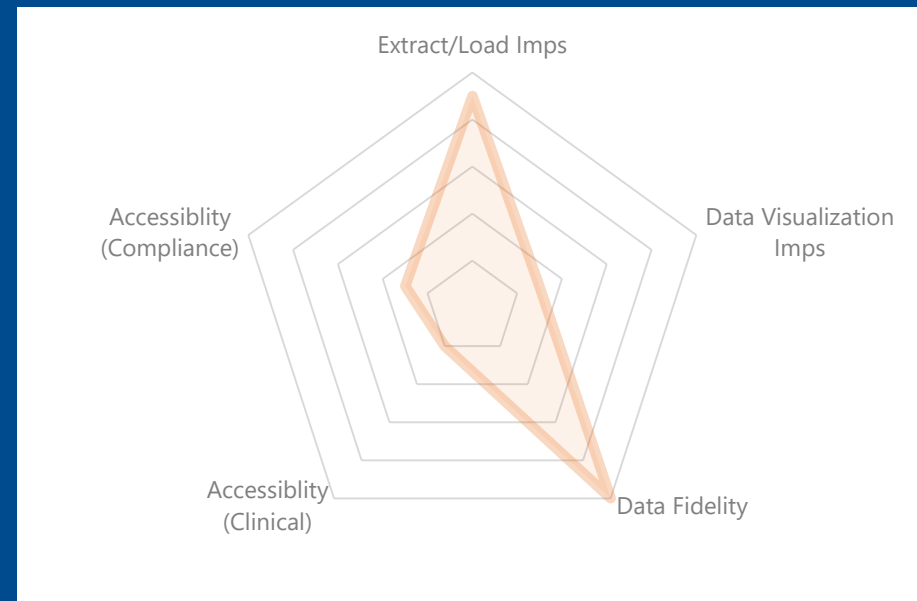
- **Pros**
 - Easy & Cheap ETL (built in)
 - Perfect data fidelity
- **Cons**
 - Near-zero accessibility
 - Potentially violate license agreements
 - Extremely expensive and time consuming to retrieve data



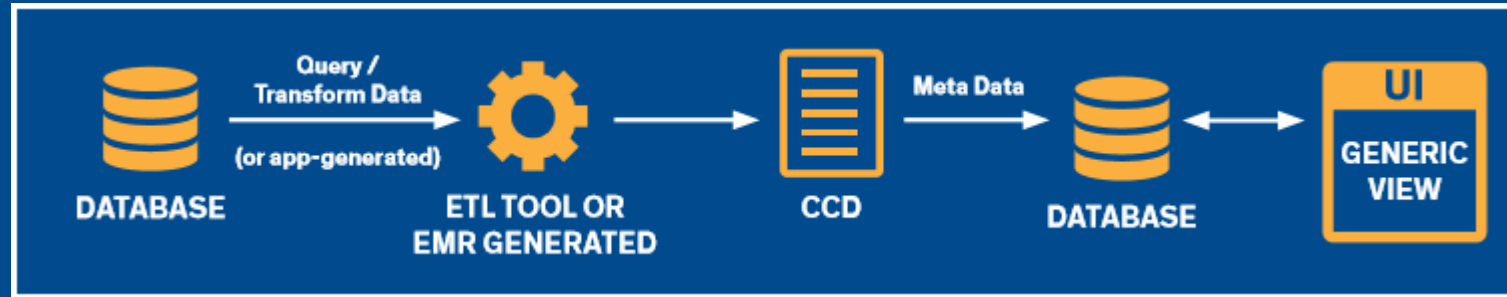
Archival Option: Extracted Schema Store



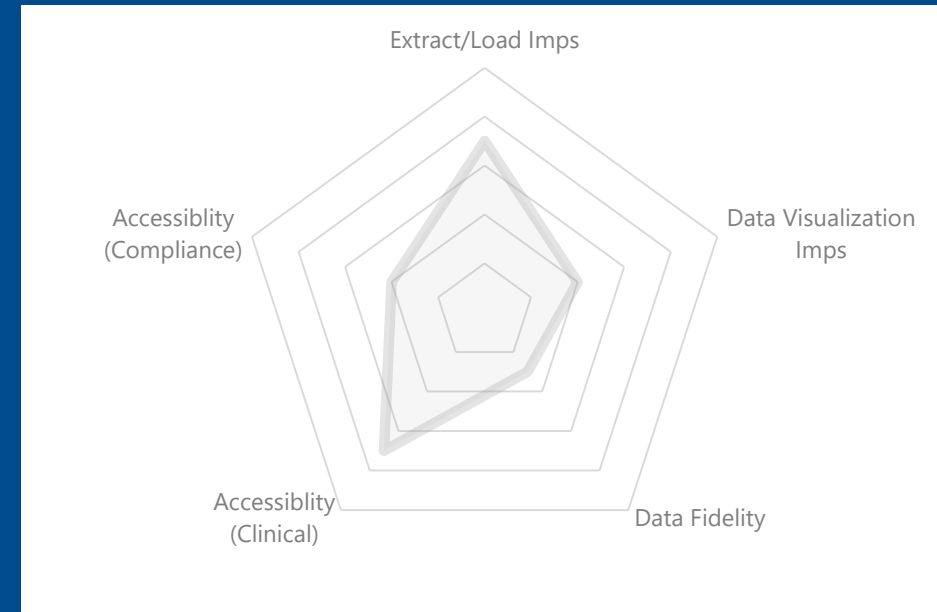
- **Pros**
 - Cheap ETL
 - Excellent data fidelity
- **Cons**
 - Generally requires significant post-extraction work for any visualization
 - Also *may* violate IP rights



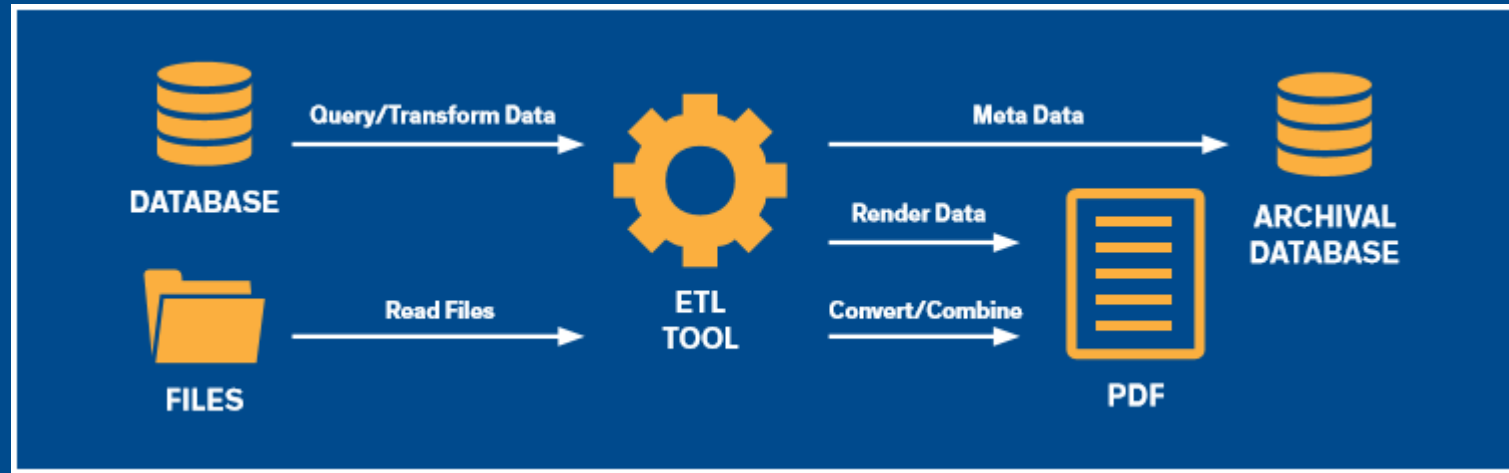
Archival Option: Modeled Document (CCD)



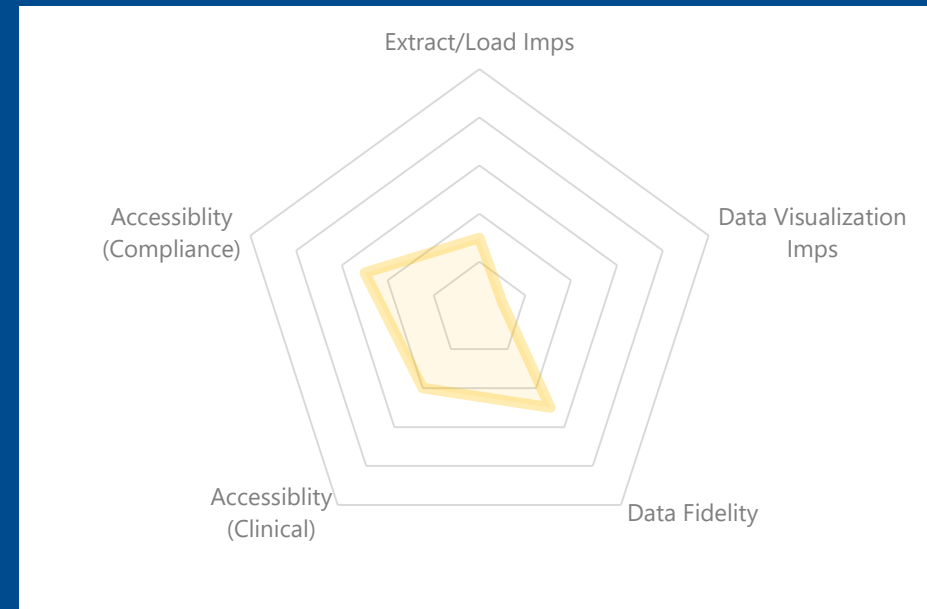
- **Pros**
 - Generally done via EMR tooling
 - With generic viewers, good clinical accessibility
- **Cons**
 - Not available for many legacy systems
 - Poor legal coverage due loss of data



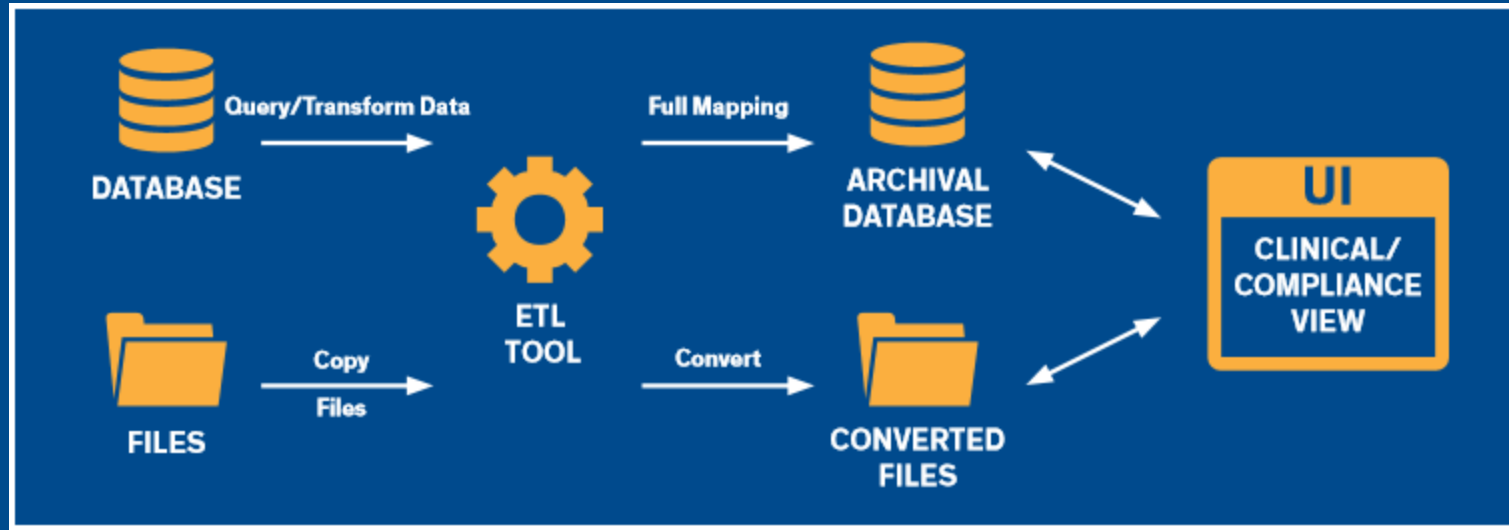
Archival Option: Non-Discrete Indexed Doc.



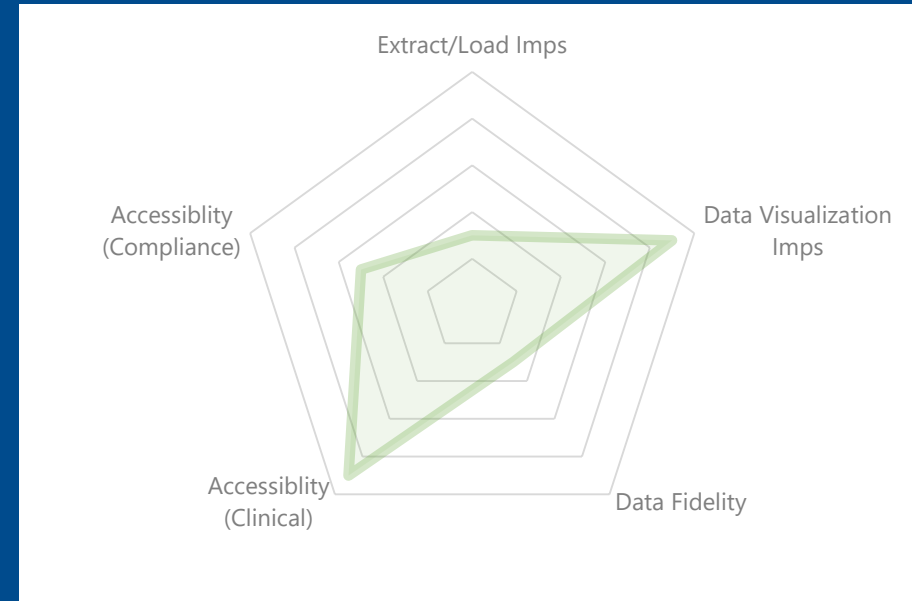
- **Pros**
 - Passable clinical accessibility
 - PDFs can be imported into EMRs
- **Cons**
 - Expensive ETL
 - Poor data fidelity due to conversion
 - Poor legal compliance
 - Unless paired with DMS, visualization can be expensive



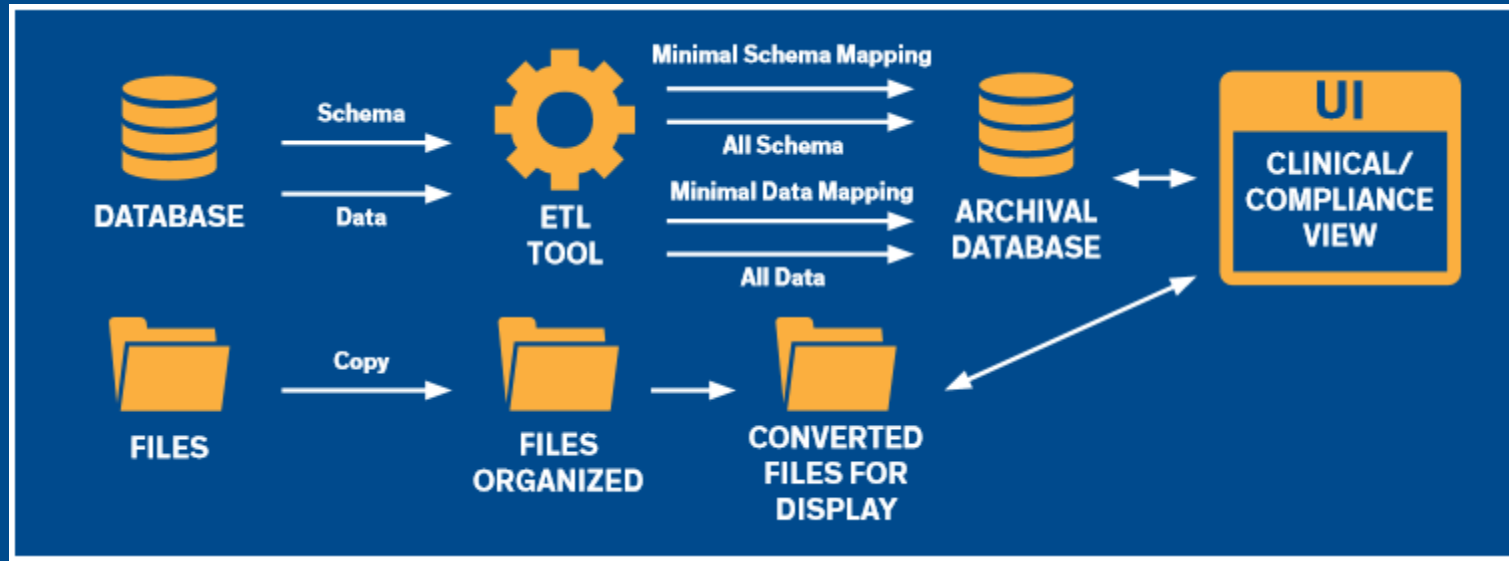
Archival Option: Fully Modeled



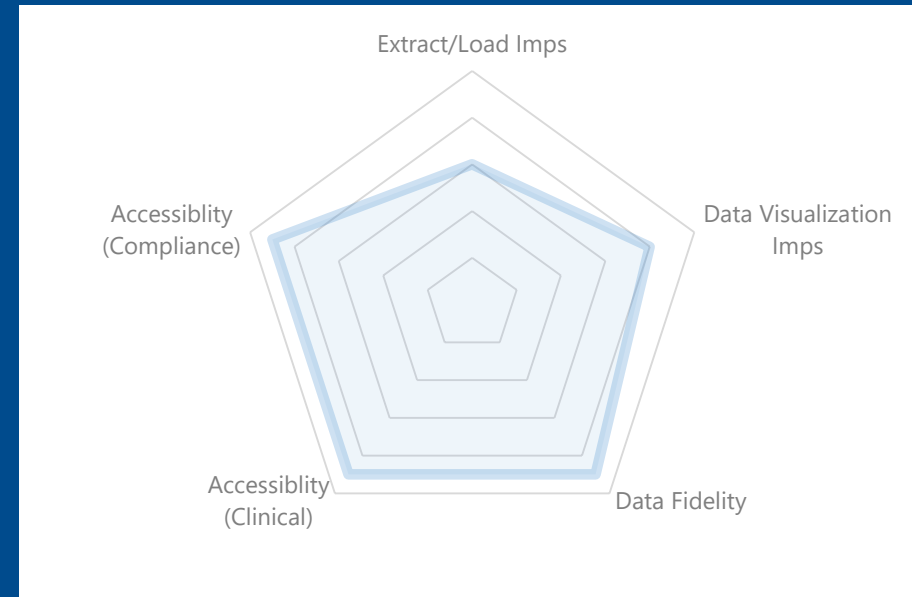
- **Pros**
 - Excellent clinical accessibility (EMR-like)
 - Little or no post-ETL visualization imps
- **Cons**
 - Expensive ETL
 - Data fidelity can suffer
 - May be missing data for legal compliance



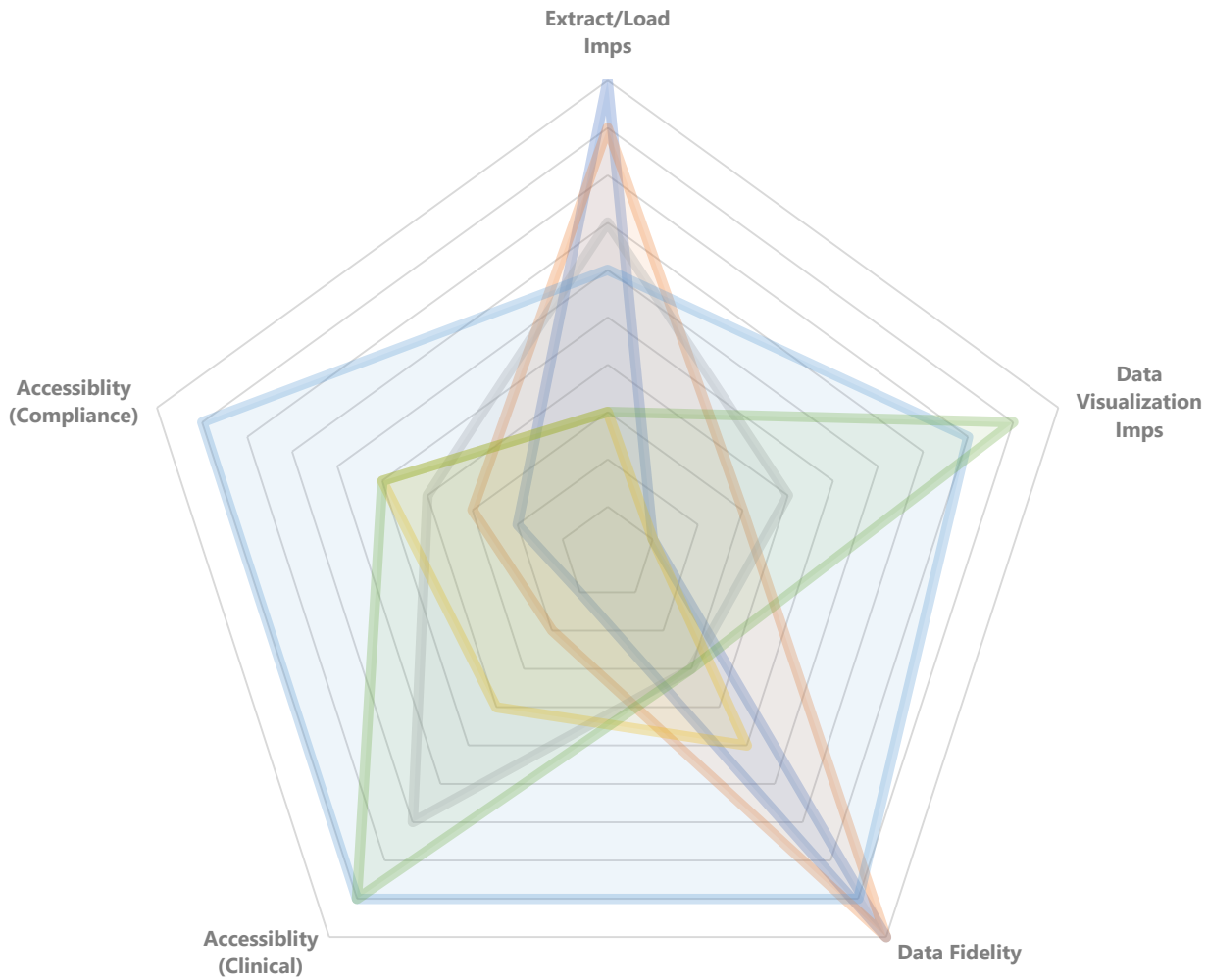
Archival Option: Hybrid Modeled / Extracted



- **Pros**
 - Very good clinical and legal accessibility
 - Excellent data fidelity
 - Little or no post-ETL visualization imps
- **Cons**
 - ETL may be moderately expensive



Archival Option Summary



- Raw Data Backup
- Extracted Schema Store
- Modeled Document
- Non-Discrete Indexed Document
- Hybrid Modeled / Extracted Schema
- Fully Modeled

Process. Process. Process.

- Definition
- Data/System Discovery
- Prioritization
- Extraction & Validation
- Stakeholder Engagement



Other Solution Considerations

- Single Sign On / EMR Integration
- Reporting / Analytics Access
- Vendor contracting
 - Cost Model (Storage? Patient count? Other?)
 - Custodial relationship
 - Exit clause
- Hosting
 - Local
 - Cloud
- Solution Security and Data Integrity

http://wiki.galenhealthcare.com/index.php/Health_IT_Security



Real World Scenario



eClinicalWorks
Allscripts SCM
Hyland OnBase



VCO Archival



Epic

ARCHIVAL SCOPE

Millions

PATIENT
RECORDS

140

HOSPITAL BEDS

350

PHYSICIANS

Terabytes

ARCHIVED DATA

Results

\$200k+

First Year Savings

\$1.4mm+

Second Year Savings

\$15mm+

10 Year Savings

97%

Lifetime ROI



Minimize
Risk



Simplify
Access



Consolidate
Data



Ensure
Compliance

Q&A Session



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PREPARING FOR TOMORROW.

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