FLATIRONS
DIGITAL INNOVATIONS

Data Archiving Case Study

Hospital Network Archives 30+ Terabytes of EHR Data

Decommissions More Than a Dozen Legacy Applications to Reduce IT Costs and Strengthen Compliance

Background

During the past several years, three hospitals in the northeast were acquired by a larger hospital network. The parent network has more than 90 hospitals and 100 continuing care facilities, home care agencies, and outpatient centers in more than 20 states. In order to simplify its expanding IT infrastructure, the network standardized on the Epic suite of enterprise software applications for electronic health records (EHRs).

When each of the three hospitals was acquired, it switched from its existing EHR to Epic. Although the hospitals adopted the network's standard EHR system, they still had patient and, in some cases, accounting and other information on their original systems. In addition, as the hospitals adopted more modern applications, they kept a number of other older systems for ongoing access to their data.

As a result, the three hospitals had more than 40 applications that required read-only capabilities. The data in these legacy applications had to be retained, but the applications' core functionality was no longer required. Each hospital was paying licensing, maintenance, and support costs solely to have occasional access to data on its legacy systems. This resulted in higher IT costs and greater data management risks, because applications that were no longer supported presented security vulnerabilities and had a greater chance of operational failure.

Strategic Healthcare IT Planning

"In the healthcare space, the ongoing trend of mergers and acquisitions has created complexity in application portfolios, as acquiring companies absorb the applications of their new organizations—which was the case for this series of hospitals," said Regina Kershner, Vice President of Operations for Flatirons Digital Innovations.

For the first project, FDI worked with one of the hospital's information systems teams to understand its business objectives for its growing application portfolio. Primary among them were controlling increasing costs related to outdated or redundant EHRs as well as mitigating risks related to their information.

> **"The results of mergers and acquisitions typically include higher IT costs and greater data management risks, which the three hospitals were eager to address."** – Regina Kershner, Vice President of Operations, FDI

Data Archiving and Application Decommissioning

To meet the hospital's needs, FDI proposed a data archiving and application decommissioning solution based on OpenText™ InfoArchive—a secure, compliant, XML-based system of record to store, retrieve, and present both structured and unstructured historical data. The solution would migrate data from the old EHRs and other legacy systems to a single archiving repository.

By moving data from multiple legacy systems to one modern archive, the hospital could:

1. Make it easier for clinicians and H.I.M. users to access historical patient information, from directly within Epic or the InfoArchive search interface
2. Strengthen security controls for legacy data and apply records retention policies
3. Eliminate the legacy systems, along with their recurring licensing, maintenance, and support costs

The Initial Project: Archiving 1.2 TB, Driving $1 M in Savings

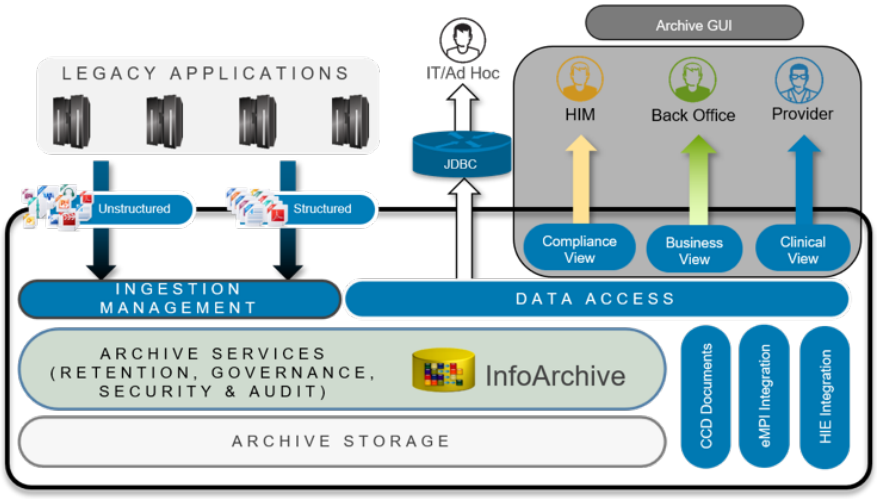
Based on the demonstration, the hospital proceeded with a project to archive Carelink, one of its primary legacy EHRs that was costing the hospital more than $1 million in annual licensing fees.

For the initial Carelink project, FDI developed the technical architecture and built a solution that:

- Transferred 1.2 terabytes of structured and unstructured data from the Carelink application to InfoArchive.
- Provided integration assistance between the archived Carelink application and Epic.
- Met the hospital's requirements for compliance and data governance.
- Allowed legacy data to be used for business purposes, such as compliance requests and big data analytics, in a future-proof, accessible, open stack, and vendor-neutral manner.

Implementation services included:

- Extracting data from the Carelink system; transforming it to vendor- and format-neutral extensible markup language (XML); migrating transformed data to the quality assurance environment; and then loading it to the production InfoArchive environment upon user acceptance
- Building and configuring search and reporting in InfoArchive
- Configuring retention policies (high-level)
- Implementing search screens based on prototypes developed during the initial requirements analysis phase
- Executing chain of custody unit tests
- Working with the hospital's end users to develop and execute a user accepted testing (UAT) process
- Providing support for Epic integration performed by the hospital's internal team



Standard Archiving Architecture using OpenText InfoArchive

Project Timeline and Results

The Carelink data archiving and application decommissioning project took 12 weeks and included the migration of 1.2 terabytes of data from the legacy EHR to InfoArchive. It allowed the hospital to save $1 million in hardware, licensing, maintenance, and support costs in the first year alone, which covered the project payback costs within a few months.

The ROI Multiplier: Decommissioning Multiple Legacy Systems

Based on the success of the Carelink project, the hospital's project sponsor identified a second legacy system to decommission. The application contained 1.5 TB of financial and patient accounting information related to the original Carelink system.

The scope of the second project included extraction, transformation, and loading (ETL) of data from the second legacy system to the InfoArchive repository, along with continued post-project support for the Carelink archive.

This project included similar implementation requirements to the Carelink archiving and decommissioning project and was completed within 24 weeks.

By archiving data from the legacy systems to InfoArchive and decommissioning the original applications, the project sponsor—whose responsibilities span multiple hospitals that had been acquired—progressively identified and executed additional data archiving and application decommissioning projects with FDI.

During a four-year period across three hospitals, FDI has archived more than 30 terabytes of data from more than a dozen legacy systems, helping the hospital network achieve millions of dollars in savings, safeguard historical patient and other information, and make it easier for clinicians and H.I.M. users to access historical information.

Project Teams and Execution

The team for each project consisted of a combination of the following:

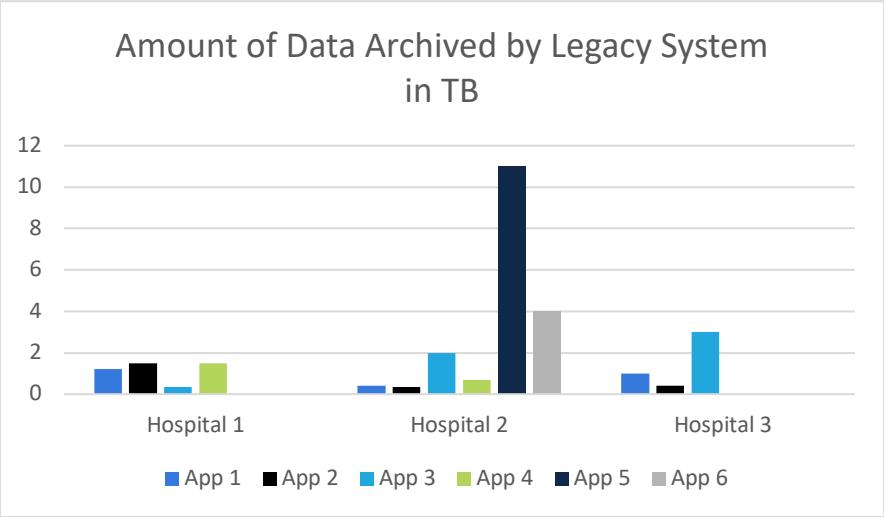
Client	FDI
• Project Sponsor – Information Systems Director • HIM Director • HIM Team Members • Financial Director	• Solution Architect (part-time) • Technical Lead • ETL Specialist • Search Forms Developer • Quality Assurance (part-time) • Project Liaison (part-time)

A project sponsor from the respective hospital was assigned per application being decommissioned. This was someone who was knowledgeable in their application space and with the legacy system.

Projects began by determining the functions or screens of the legacy application that needed to be replicated in InfoArchive. Requirements were established and turned into user stories. FDI modeled how the data would be displayed in the archive and provided mockups of what the final display would look like since it differed from the source application. Much of the work was completed remotely, including requirements gathering, user acceptance testing, and production deployment.

Summary of Legacy Applications Decommissioned

	Application	*Application Type*	*Database Size*	*Project Length*	*Project Start Date*
Hospital 1					
Project 1	Carelink	EHR	1.2 TB	20 weeks	Aug 2015
Project 2	SFS	Financial / patient accounting to backup Carelink	1.5 TB	24 weeks	Feb 2016
Project 3	CareMedic	Financial Documents [835s/837s/UBs]	35 GB	12 weeks	March 2016
Project 4	Allscripts Touchworks	EHR	1.5 TB	12 weeks	Oct 2017
Hospital 2					
Project 1	McKesson Horizon + McKesson Star	EHR	400 GB, 35 GB	6 weeks	September 2016
Project 2	InteGreat	EHR (outpatient)	2 TB	7 months	January 2017
	Paragon	Hospital EHR/Patient Accounting	700 GB	7 months	January 2017
	Paragon Audit	Audit database: everything that happened to any record	11 TB	2 months	July 2017
	OneContent	EHR of scanned documents (document database)	4 TB	3 months	July 2017
Hospital 3					
Project 1	Horizon Patient Folder	EHR	1 TB	4 months	April 2018
	Paragon + modules	AR, payroll, general ledger, materials management, charge master	400 GB	5 months	February 2018



While most applications contained between 35 GB and 1 -4 TB, one system contained 11 TB of legacy data that was migrated to InfoArchive.

Benefits of A Single Archiving Strategy

The archiving and application decommissioning solution provided several benefits to the hospitals, particularly due to their relationship within the same network.

1. **Shorter Project Timelines and Lower Project Costs:**
   The three hospitals used one instance of InfoArchive and shared the supporting server infrastructure. After the first system was decommissioned, each subsequent project was completed faster since FDI was able to re-use the existing users and infrastructure for deployments. This also reduced overall project costs.

2. **Data Standardization:**
   Archiving data from disparate EHRs to a single archive provided the opportunity to standardize dates and formatting across all legacy data.

3. **Reduced IT Costs:**
   Each hospital was able to eliminate the hardware, software, and support costs associated with its legacy systems, adding up to millions of dollars in savings.

4. **Lowered Risk:**
   Proactively moving data from legacy systems lowered each hospital's risk of compromising data security that would otherwise have been on unsupported systems.

5. **Facilitated Clinician Access to Patient Records:**
   Consolidating patient information from several EHRs onto a single archive made it easier for clinicians working in any of the network hospitals to retrieve historical patient information from within Epic, contributing to improved patient care.

6. **Easier Requests for Information:**
   Providing access to legacy information on a single archive also made it easier for H.I.M. staff to respond to requests for information and perform audits and other tasks.

WORK SHARED ACROSS PROJECTS	UNIQUE TO EACH PROJECT
Single Infrastructure for each Dev/QA/Production	Custom queries
Configuration Management	Custom searches
Active Directory Configuration	
Developer Access	
Standard transformations on dates/formatting	

Why FDI?

The hospitals chose FDI to execute the data archiving and application decommissioning projects for several reasons:

- The InfoArchive-based solution was easier to use than other archiving solutions the hospitals investigated.
- The comprehensive data archiving and application decommissioning service from FDI required much less time and effort from internal hospital IT resources than other options.
- The client was pleased with FDI's expertise in providing data access, retention, security, and enhanced user functionality.
- The FDI implementation team demonstrated superior knowledge of technical data migration practices that allowed them to execute multiple archiving projects on time and either on or below budget.

Conclusion

Many healthcare providers are consolidating on a single EHR and other modern enterprise systems to replace multiple EMRs, and operational, financial, and other applications. Yet they continue to need to access or to retain data in those legacy applications.

Data archiving and application decommissioning enables providers to continue to access and use data from old applications, while providing better data security and without having to continue to pay the hardware, software, maintenance, support, and staffing costs of maintaining legacy systems.

The healthcare network recognized that mergers and acquisitions had an impact on its growing IT portfolio. In the effort to standardize on Epic as its EHR, something needed to be done to address the other EHR and legacy systems and the valuable data on them.

By proactively archiving data from legacy systems to InfoArchive, all three hospitals simplified their IT infrastructures, reduced overall costs, and improved patient care by giving clinicians better access to patient information. And because they are sharing a single archiving infrastructure, they can continue to decommission other legacy systems to further reduce overall costs and strengthen their data management capabilities.

ABOUT FLATIRONS DIGITAL INNOVATIONS

Flatirons Digital Innovations, Inc., FDI (www.fdiinc.com), builds a more educated and informed society by enabling transparent and accessible digital information. It does this by facilitating timely, accurate, and informed conversations between organizations and their customers that help solve complex content- and data-driven challenges at the heart of business operations. FDI specializes in enterprise content services through technology assessments, solution blueprints, and implementation, integration and support for projects ranging from application decommissioning and data archiving, to document capture, revenue lifecycle management and more. Flatirons is based in Boulder, Colorado.

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