Case Study

Leading Global Medical Research Provider Advances Data Collection and Quality Reporting for Surgical Registries

emids helps world's largest provider of biopharmaceutical development and contract research services develop streamlined platform for gathering and delivering metrics to improve surgical care

Overview

A multinational Fortune 500 company and the world's largest provider of biopharmaceutical development and Contract Research Organization (CRO) had contracted with the largest organization of surgeons in the world to improve data collection and reporting for all of their clinical registries.

The registries portals are web applications maintained by research organizations and healthcare providers, which store detailed, anonymized information about patients' surgical procedure or post-surgery condition. Surgeons affiliated with the organization hire registrars to input the data relevant to patients' surgical procedure and post-surgical conditions assimilating from various hospital information systems using registry portals.

Making use of the registry data is critical in the national movement to deliver clinical and quality measures across core practice areas, such as surgery. This allows clinicians to improve patient care and, ideally, outcomes. The CRO was charged with the task of combining patient registries with other research organizations and providers, such as hospitals, to provide the organization with comprehensive and accurate reports.

While integration is always challenging when merging disparate data sources, the registries have unique data structure and formats. This made the process of data extraction and transformation highly complex. Currently, much of the reporting is done manually. Finally, the lack of a unified data warehouse at the organization further hindered reporting goals.

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Business Opportunity

emids conducted a three-day workshop with the CRO to understand the basics of the systems used in its data storage platform and its overall architecture, along with the functionality and infrastructure of each component. During the process, emids and the CRO determined the need to build a scalable, secure and dynamic platform to store and manage the clinical registry data for the organization of surgeons.

We explored the requirements for migrating historical data from existing registries to the new platform and keeping the clinical data of individuals private for development and quality assurance purposes. We also examined the current challenges of the reporting structure and requirements for achieving future reporting initiatives.

Solution

The platform in development has two components: a unified operational data store (ODS) and a data warehouse. The ODS is used for integrating disparate data from multiple sources, while the data warehouse is needed for long-term storage.

Services We Provided

- **A unified web portal** to capture data from all clinical registries, with an easy-to-use interface for external vendors' registrars who must enter and submit the data.
- **A unified data warehouse** to store the data from various registries in the same structure and format. The system, built on Oracle using Talend ETL (extraction, transformation and loading) software, includes a self-service, web-based business intelligence (BI) application to make it easier for surgeons to review data and reports.
- **Automated data migration** of existing registries to the new platform, for the organization using emids' dynamic ETL accelerator tool.
- **A data validation tool and process** to validate data between clinical registries and the new platform.
- **Data de-indentification** to ensure that the protected health information (PHI) of patients has been stripped on identifying data right at source.

Technologies Used

The platform is hosted on Amazon Web Services (AWS) Redshift, and it also integrates an array of technologies as follows:

User Interface
Liferay Portal, Orebon/ OSM Form Builder

Operational Data Store & Master Data Management
Data Modeling Tool (ERWIN/ER Studio/SQL Data Modeler)

Control Vocabulary
SVN (Subversion), Nexus

Data Warehouse
AWS Redshift, Oracle 12c

Reporting & Business Intelligence
Spotfire

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Platform Infrastructure

DEV, QA & UAT Environment

Includes a data warehouse, operation data store, master data management and XML type.

Production Platform

Includes a data warehouse, operation data store, master data management and an RDC XML type.

Migration

Includes mapping metadata, migration scripts and a data validation tool.

Source

Includes databases at various registries. PHI elements de-identified at source.

Results

The new unified, clinical data warehouse and portal provides a more efficient, comprehensive system for capturing, merging and delivering quality metrics to the surgical community, with the goal of improving patient care. Along with giving the organization and third-party registrars a single, standard system for submitting data, the new platform provides surgeons and other clinical users with a web-based system for accessing data and running reports, improving their analytics and insight.

Benefits

NEARLY 40% REDUCTION

in testing effort by automating testing of data migration through our data validation tool.

Increased EFFICIENCY

for end users entering data across clinical registries.

MORE THAN 50% REDUCTION

in development effort and time from automating migration of data from existing registries to new platform through emids' dynamic ETL accelerator tool.

This will ultimately result in significant cost savings.

Enhanced ANALYTICS & REPORTING

enabled by a self-service BI application capable of providing ad-hoc reporting, cross-registry reporting, etc.

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emids is a premier provider of healthcare IT services and solutions. emids enables healthcare entities to achieve accessible, affordable and high-quality care by providing custom application and data solutions. Our clients experience true partnership with us as together we navigate the challenges of a rapidly changing healthcare industry.

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