



CURL: CU Record Linkage System

Category

Data Interoperability

Problem

Health data is often fragmented across multiple sources and a more complete, integrated record could be mined to improve outcomes.

Technology Overview

A health record linkage platform which can link datasets transparently, incrementally, and securely across multiple sources.

IP Status

- ▶ Available for Exclusive Licensing, Non-Exclusive Licensing, and Co-Development

Value Proposition

- ▶ Evaluated at over 15 sites for usability
- ▶ HIPAA-certified
- ▶ Ability to [incrementally link data](#) to build a master patient index for longitudinal research
- ▶ Customizable software capable of incorporating cutting-edge novel linkage methods and can apply to any data source

Market Attractions

- ▶ Global Healthcare Analytics Market estimated at \$14B in 2019 with an expected CAGR of 28.3%

Contact

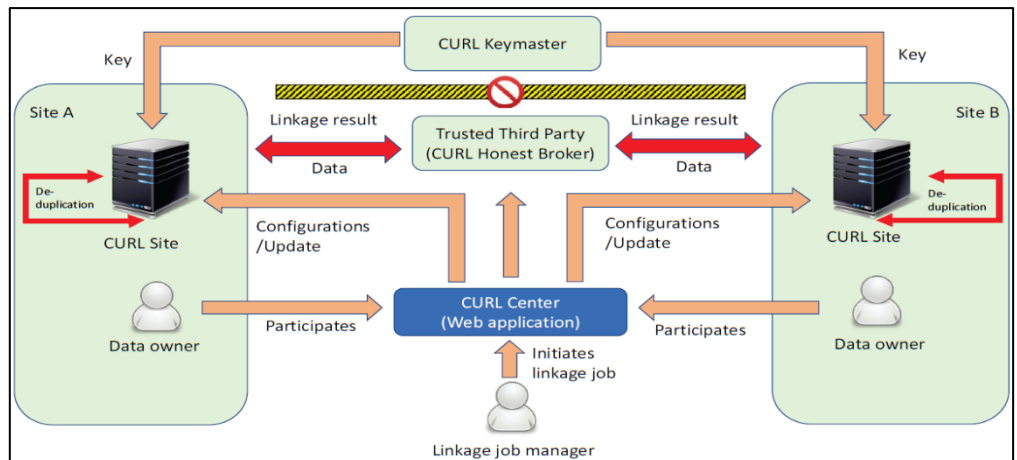
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Problem: A study from McKinsey and Company projects that system-wide data analytics efforts using health data [could cut overall healthcare costs by 12-17%](#), representing approximately \$500 billion in savings in the US, by addressing issues in quality of care, cost of care, care gaps, access, and more. However, much of this health data is fragmented across multiple sources. This limits mining efforts which require large, high quality datasets to be effective. Many of the open-sourced linkage tools already available are not developed to be used with HIPAA-protected patient data and furthermore, the linkage methods in these tools are not easily adjustable to accommodate differences in the source data nor to easily incorporate novel methods of record linkage. As a result, there is a need for a data interoperability tool which can link patient records from disparate sources while preserving the sensitive nature of patient data. In the clinical context, such a tool also creates value as linked health data across providers creates a complete, longitudinal story of a patient’s medical history to ultimately improve clinical decision making and patient outcomes.

Solution: University of Colorado researchers, led by data science expert Dr. Toan Ong, have developed a privacy-preserving record linkage platform which enables institutions to easily adjust the linkage method and create high quality, linked datasets. CU Record Linkage, designated as CURL, cleans and normalizes linkage variables in a data set from supported sources behind firewalls to ensure all data is usable, overcoming the issue of inconsistent data formatting. Additionally, CURL utilizes a process known as “hashing” in which sensitive data is encoded into nonsensical information strings which are then linked by an entity known as the honest broker, whom is independent of the data sources. Once linked, this process keeps patient data secure from all parties involved, including the honest broker. CURL also offers a centralized portal where all components of record linkage operations can be created, configured, and monitored. Our researchers emphasize the [transparency of the record linkage orchestration](#) where all methods and decisions are visible for regulatory and security review and oversight. The state-of-the-art CURL system allows researchers and clinics to seamlessly link patient records for use in health data analytics and making better-informed clinical decisions.



Example workflow and connectivity of CURL. Incorporation of CURL key master and honest broker ensures privacy of data among all parties involved.