LIN✕MART

Maximising insights for effective health service delivery

THE POWER OF INSIGHT

Data is critical to health care research and innovation and making the most of data requires the very accurate linkage of disparate data sources. Data linkage is used to 'join up' or link together records that belong to the same person. It provides a detailed yet anonymous picture of patient experiences and health outcomes, generating insights that are used to improve the efficiency and effectiveness of health service delivery, clinical care, and guide the strategic directions of the health system.

LINKING IT ALL TOGETHER

In these privacy- and data security-aware times, the data linkage community needs software that combines extreme accuracy, security, scalability and speed. That community also needs linkage software that can cope with the complexity of ongoing, operational data linkage, such as

- Managing ongoing linkage of data collections over time (without the need to relink at intervals)
- Managing multiple linkages and data extractions
- Managing amended and deleted records within an enduring system
- Handling diverse consumer and data custodian needs, such as a researcher wanting to link their own data or data custodians imposing restrictions on a particular linkage

A STATE OF THE ART SOLUTION

Developed within Curtin University, the LinXmart software matches records using deterministic and probabilistic methods. The software produces accurate results, maximising the insights from data. LinXmart can link very large files (tens of millions of records) at speed.

LinXmart has been specifically designed to meet the challenges of operational data linkage and to manage the growth of increasingly complex and dynamic linked datasets. It handles ongoing as well as project based linkages.

Data from all parts of the linkage process (loading, linking, grouping, reviewing, extraction) and repeated processes for enduring linkage are managed by the software.
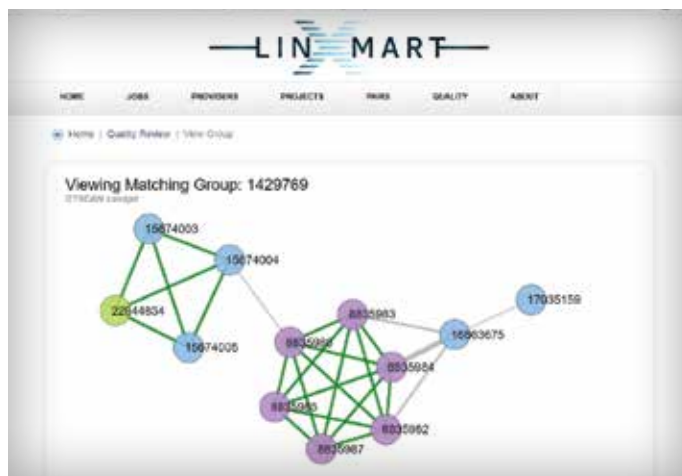
LinXmart has key security features, including:

- Role based permissions
- Project separation
- Privacy-preserving features: a unique ability to load, process and link Bloom-encoded data returning very high quality results (see separate fact sheet)
- Secure storage of all data and results with logging and auditing

Using LinXmart requires minimal management and operational overheads.

TECHNICAL SPECIFICATIONS

- Built on the .NET developer platform

- Microsoft SQL Server database

- Virtual machine and Azure platform services deployment

- Authentication with Active Directory, Azure AD and other OpenID Connect providers

- Developed within an ISO/IEC 27001 certified Information Security Management System to ensure the system's security, continuity, and ongoing maintenance

- Web API for integration and automation, providing functions to configure projects, ingest data for linkage and extract linkage maps

Consult the **LinXmart with PPRL fact sheet** for additional information about LinXmart's unique privacy-preserving linkage features.

WHERE IS **LinXmart** BEING USED?

LINKING UP HEALTH DATA: CROSS BORDER HOSPITAL USE

LinXmart has been used to link hospital records and death registration data from four jurisdictions in Australia: New South Wales, Western Australia, South Australia and Queensland. The linkage made it possible for a national research study explore cross border hospital use and hospital related deaths (i.e. deaths in hospital or within 30 days of leaving hospital) in Australia. The linkage involved over 40 million records.

https://dx.doi.org/10.5694/mja14.01414

BEYOND THE HEALTH SECTOR: CREATING AN INTEGRATED DATA RESOURCE FOR GOVERNMENT (SIDR)

LinXmart is 'connecting up' sensitive datasets across sectors. In a pioneering initiative, the WA Government has partnered with Curtin University and the WA Department of Health to establish the Social Investment Data Resource (SIDR) a linked, administrative database containing de-identified information on individuals who have had contact with key government agencies. These agencies include the Departments of Communities, Health, Education, Justice and WA Police. The SIDR will help government and researchers to better design, target and evaluate social policies, services and intervention programs across Western Australia.

https://www.wa.gov.au/organisation/department-of-treasury/social-investment-data-resource

GOVERNMENT OF WESTERN AUSTRALIA

OUR TEAM

The LinXmart team has decades of experiences and expertise in operational data linkage, software development, academic research and government administration.

ANNA FERRANTE
Adjunct A/Professor
Curtin University

JAMES BOYD
Chair of Digital Health
Public Health
La Trobe University

ADRIAN BROWN
Software Architect
Centre for Data Linkage
Curtin University

SEAN RANDALL
Senior Research Fellow
Deakin University

Our team works with data linkage experts across Australia, Germany, UK and Canada.

WE'RE HERE TO HELP

Our team is constantly researching and improving the software. We offer linkage services, act as a linkage unit and offer LinXmart on a commercial basis. If you are interested in our software or services, then please visit our website **linxmart.com.au** or talk to us directly
info@linxmart.com.au

Certified System ™
Information
Security
ISO 27001
SAI GLOBAL