How does an accessible data platform work?

Livestock Genetics Forum
Brisbane, February 2018
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About us

- Create bespoke agri software
- Operating for 14 years
- Built on ag-science background

Rezare systems

Helping agribusinesses to embrace digital

Provenance story • Livestock • Nutrients • Forecasting

www.rezare.com

About us

- Databases for B+LNZ Genetics
- Collaborate with ABRI
- Data standards specialists

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Elements of a Data Platform

Access data from multiple sources

Controlled access for data sharing

Supports a variety of applications

Provides powerful analytics

Features of an open science platform

Findable	IDs and meta-data
Accessible	Protocols and authorisation
Interoperable	Shared vocabulary
Reusable	Licences and meta-data

The FAIR Guiding Principles for scientific data management and stewardship, Dutch Tech Centre, 2016

Industry genetic improvement

- Replace functional but ageing database
- Stores genotype, phenotype, pedigree data
- Multiple species (currently sheep, deer, milking sheep)
- Core components
  - Database(s)
  - Integration layer “API” – data collection, labs, analytics
  - Processing services

Livestock data collection platform

Livestock One
One system • One touch

- Generalised animal recording platform
- Database, web, mobile and integration (API) platform
- Licenced and branded under multiple brands

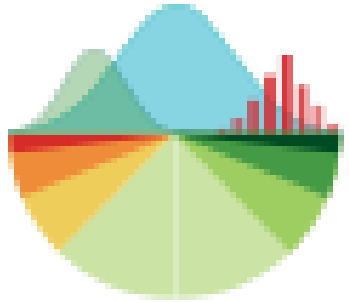
pureFarming

Livestock and supply chain management

GALLAGHER

Animal Management Dashboard

NZ Farm Data Initiatives



DataLinker

- Funded through Industry/Government co-investment
  - Transforming the Dairy Value Chain Primary Growth Partnership
  - Red Meat Profit Partnership Primary Growth Partnership

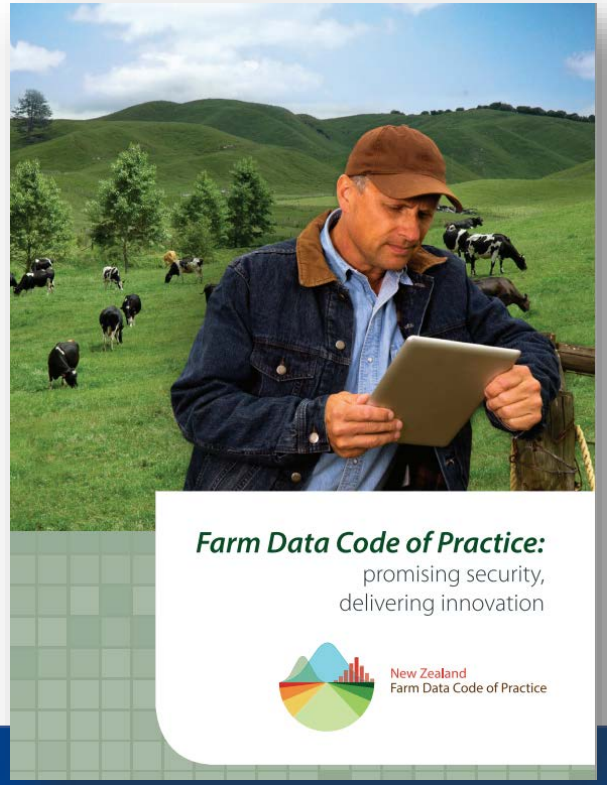
- Three workstreams
  - Code of Practice – better understanding of rights and practices
  - Data Standards – common vocabulary
  - DataLinker – standards-based interchange framework

Farm Data Code of Practice

- Created collaboratively by 60 industry companies/organisations

- Requires:
  - Understandable terms and conditions regarding data
  - Clear statement of rights and usage of data
  - Ability for farmers to get data in usable formats
  - Organisations have policy or processes that protect data

- Accreditation “logo” process



Data Dictionaries

- Item name
- Description
- Synonyms
- Data Types

Item Name	Description	Data Type
Birth Date	The date on which an animal was born. *See also: Birth Date Confidence, Birth Year, Birth Cohort*	ISO 8601 Date
Birth Date Confidence	As birth date may not be known with absolute precision, this indicator specifies the confidence with which the date is known. The Birth Date Confidence Indicator is a variation on the Date Accuracy Indicator used by the Australian Institute of Health and Welfare[10], adjusted to match the format of ISO dates (YMD). It is a 3 character string with positional characters representing Year, Month, and Day (YMD). Character values = A (accurate), E (estimated), U (unknown) (e.g. "AEU")	3 character string with positional characters representing Year, Month, and Day (YMD)
Birth Location	Location identifier that distinguishes the location at which the animal was born, using a URN-based identification string that contains the namespace and unique identifier within that namespace. An example for the MPI Farms Online system might be "nzl:farm:farmsonline:WK-3284-0046".	URN string
Birth Rank	A value describing the number of progeny born to the same dam in the same birth event; values are 0 if the animal is born dead, 1 if the animal is a singleton, 2 if it is one of twins, etc. Typical values are 0-5, or 0-2 for cattle. May be NULL if unknown.	Positive Integer, NULL if unknown.
Birth Cohort	The *contemporary group* or *cohort* that describes the season (spring/autumn) within the birth year into which animals are categorised. This is most likely derived or calculated from the birth date. As seasons vary around the world (including variations with 2, 4, 6, or 12 cohorts), a cohort number is used to interchange this data.	Integer cohort number (2 digits)

Covering areas from animal recording, spatial features, financial, to health and safety. www.farmdatastandards.org.nz

What is DataLinker?

A framework for interconnection – not a database, not a hub

- DataLinker registry – Make data findable
  Find messages supported, who implements, and terms for access
- Farmer permissions – Make data accessible
- Standard integration messages – Make data interoperable
  Based on the modern web standards, Open Ag Data Alliance, schema.org
- Data access agreements – Make data reusable
  Standard or custom licence agreements

What schemas already exist?

- Animals & Traits (animal recording, genetics)
- Animal Merits (reporting EBVs, indexes, other merit measures)
- Sessions (session-oriented animal data – weigh scales, etc)
- Pasture Covers (paddock-level pasture cover assessment)
- Pasture Growth (regional and farm location pasture growth forecasts)
- Animal Carcase (meat processor carcase reporting)
- Livestock Transactions (stock numbers)
- Farm Profile (base farm description – prototype)
- *Farm-scale spatial data (under development)*

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