



eratos



Final report

Australian Agrifood Data Exchange Phase 2: Experiment 2 – Biosecurity

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Abstract

The Australian AgriFood Data Exchange (AAFDX) project seeks to define and articulate the business case for investment in an industry designed and overseen data exchange with a vision to create “An interconnected data highway for Australia’s AgriFood value chain”. The purpose of the AAFDX is to provide a centralised mechanism for the exchange of data between participants in the agrifood value chain.

Milestone 6 is the culmination of a series of experiments (4) that were conducted to explore various applications and different methods of data exchange to deliver working prototypes to assist with informing the future business case. The experiments were delivered by four technology solution providers selected from an open market RFI process.

The experiments were delivered by each of the four technology solution providers in collaboration with industry, government, and research representatives. Each experiment focussed on a specific use case.

This report deals with Experiment 2 – biosecurity and contamination information for wine grapes moving across border from NSW and Victoria into South Australia delivered by Eratos.

The case study used to guide the discovery journey was strengthening biosecurity in viticulture. Interviews conducted by a UX specialist guided the initial understanding of the problem space, focusing on where reality diverges from official processes. Both hard copy and digital data were combined to create a detailed picture of biosecurity in the viticulture supply chain.

The experiment identified that the scale of track and trace data needed to protect viticulture and, more broadly, AgriFood is substantial. Trust was a key insight in both social and technical contexts: Trust and transparency regarding the use of data. Trust in the data architecture ensures clear custodianship and specialized permissions and access. In combination with trust, promotion and understanding of the value created from participation in the data exchange are crucial to driving adoption.

The solution is a distributed and agnostic data infrastructure that is interoperable, empowering applications to be built on top to solve specific problems. The potential benefits to the AgriFood industry can be significant, promoting greater data collaboration, normalization, and standardization that could enhance sector productivity and efficiency to encourage the broader development of more sophisticated solutions and tools.

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1. Milestone description

The strengthening biosecurity in viticulture experiment, the subject of this report, was managed by Eratos to test the viability and feasibility of a data exchange to manage this use case. The audience for this report are the stakeholders of the AgriFood data exchange, particularly those involved in the design, creation and participation of the exchange and its implementation.

Whilst the problem space for this experiment is focussed on viticulture, the end solution is targeted to the broader agricultural community. This paper highlights the benefits of a robust data exchange in viticulture biosecurity and beyond to the broader Agriculture industry. Furthermore, findings from this experiment will inform the approach to be taken to move participants into a data sharing ecosystem.

2. Project objectives

The original objectives of the experiment were defined as follows:

1. Test the viability and feasibility of the use case in the context of a data exchange
2. Demonstrate a design approach and solution for a data exchange (including permissions and data standards)

Using the management of the biosecurity risk Phylloxera as a use case for an interconnected data exchange, this experiment explored how the proposed solution is capable of working successfully and easily to better manage an incursion. This experiment also highlighted some of the considerations relevant to the adoption of a technical solution.

3. Methodology

The experiment began with a discovery phase to understand the problem space. A UX specialist conducted 20 interviews with industry stakeholders and sample data in digital and physical format was also collected.

With the knowledge gained from the interviews, the datasets were analysed and mapped together, generating an understanding of all relevant elements. An agnostic data structure was designed to house these elements whilst allowing for broader application across the entire sector.

Available on the Eratos platform, this contextualised and reusable dataset is the foundation of what the data exchange could look like with the ability to build fit for purpose solutions on top. A prototype was built on top of this dataset to demonstrate an example of a bespoke solution that may be crafted.

4. Results (to-date)

There are multiple considerations to an industry-wide adoption of a data-exchange and sharing the data required to make the exchange a reality.

- This is a social as well as a technical problem space. Gaining an in-depth understanding of the attitudes and concerns of the people involved behind the processes is key to aid individual participation in data sharing. Some considerations that must be addressed:
 - Anxiety around sharing data
 - Comfort around existing (manual) processes
 - Biosecurity alone is not enough of an incentive to change behaviour
 - Trust in what the data will be used for and how it will be shared
- A distributed technical architecture that fosters trust through clear data ownership, permissioning and custodianship is key to promoting participation in the data exchange
- A solution where the same dataset can be used for multiple purposes has significant advantages:
 - The same dataset used multiple times is efficient
 - Reuse of the same dataset builds trust in the data quality with minimal data queries due to differing data
 - Different stakeholders can gain relevant insights to their specific problems with the same underlying dataset

5. Success in meeting the milestone

The project has highlighted that a fully digital data exchange containing all pertinent data sets with meaningful context and customisable permissioning would unlock many benefits to the industry.

Common data definitions and an integrated dataset allows for better understanding, collaboration and relevant solutions to be built on top for various requirements with full control over data permissions remaining with the data owner. Furthermore, A digital solution would improve data quality and efficiency of collection, collation, analysis and most importantly outcomes for the end user. Furthermore a fully digital end-to-end solution would provide further benefits outside of biosecurity such as easily auditable processes to comply with certification etc requirements.

6. Overall progress of the project

The project is progressing as planned.

7. Conclusions/recommendations

Over the course of this experiment, some challenges and learnings have also raised opportunities for the future solution:

- the use of machine learning and optical recognition in digitising paper documents

- Trust in data sharing and how to move people into participating as a future research project
- Additional use cases for agriculture around managing climate change