

Advancing Data Interoperability Standards for Livestock Welfare and Production Systems

Christiane Bahlo - PhD Candidate, Regional University Network Precision Agriculture Flagship



Context

- Precision agriculture is disrupting plant and intensive animal production systems
- Precision livestock farming technologies are starting to bring benefits to extensive livestock systems
- Precision livestock farming benefits:
 - Record production & welfare data
 - Provide farm management decision support
 - Potential to enhance animal welfare
 - Cost savings (labour & inputs)
- Sensor and communication technology is rapidly developing
- Lack of international interoperability data standards for precision livestock farming (Anderson, Estell, & Cibils, 2013)



Research Questions

How can the exchange of animal production and welfare data be advanced through the use of international interoperable data standards?

What are the possibilities for federating precision livestock farming data with other geo-spatial data sources?



Potential Outcomes

Currently, precision livestock data is collected and stored in a variety of formats and storage systems (Nash, Korduan, & Bill, 2009). The application of interoperable international data standards has the potential to transform such livestock data into more valuable, federated, geo-spatially enabled data sets that will lead to greater insights through analysis and visualisation.

An investigation of related subject areas is expected to yield additional insights into ways to connect the animal welfare data with other data sets. The outcome of using such linked data sets could be the development of predictive models, improved management tools and provision of improved map-linked reporting and visualisation, available to the public.

Weather Data

Pasture Data



Interoperability Standards

Research Methods

- Literature review
- Determine measurable production and welfare indicators
- Investigate the use of:
 - Sensor technology
 - Legacy data
 - Commercial sensor data
 - Experimental sensor data
 - Potential new data collection devices
 - Existing international interoperability standards
- Investigate possibilities for federating livestock data with relevant geo-referenced data for visualisation purposes



Acknowledgements

I would like to thank my supervisors Assoc Prof Peter Dahlhaus (FedUni) and Dr. Mark Trotter (UNE).

References

Nash, E., et al. (2009). "Applications of open geospatial web services in precision agriculture: a review." *Precision Agriculture* 10(6): 546-560.

Anderson, D. M., et al. (2013). "Spatio-temporal Cattle Data—A Plea for Protocol Standardization." *Positioning* 04(01): 115-136.

