



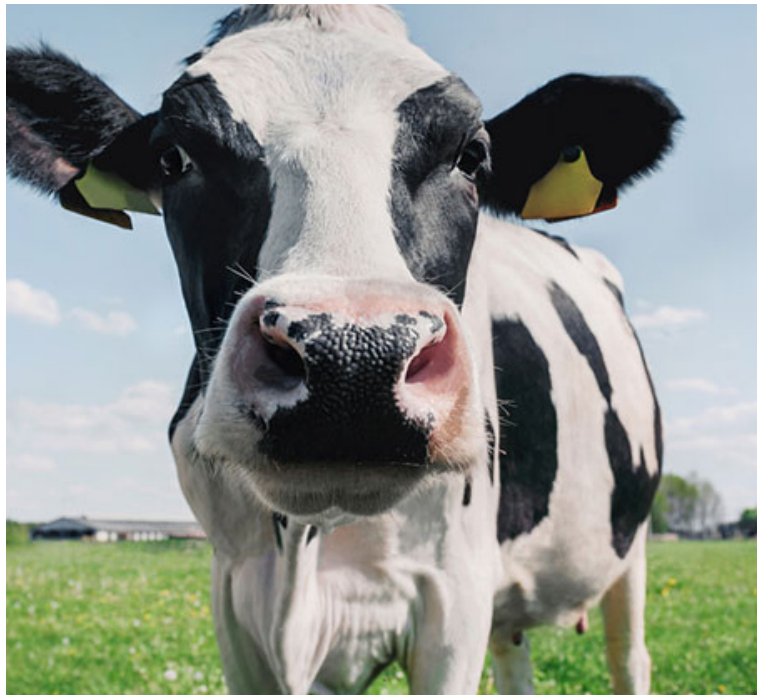
RESPONSIBLE DIGITAL TRANSFORMATION IN ANIMAL AGRICULTURE

Overview: Farming is fast becoming digitalised. Innovations, such as the use of automated technologies and data for farm management, are designed to offset the broader challenges of climate adaptation, Net Zero and a changing agricultural labour market. While bringing many benefits, digitalisation in animal farming is altering human-animal relationships, impacting animal welfare in ways that raise questions for wider debate, of a social, ethical and political nature. Our contribution to work package 4 (WP4) is informed by inclusive approaches to digital transformation, founded upon the principles of Responsible Research and Innovation (RRI).

With RRI as a starting point, our research project has identified proposals that will help ensure that digital technologies in animal agriculture can be developed and implemented responsibly, in ways that are inclusive of diverse stakeholders and public viewpoints, taking into account the potential future directions of digital transformation in the sector and efforts to responsibly regulate animal welfare, environmental impacts and food safety and security.

- Scientists at Scotland's Rural College (SRUC) are actively involved in designing digital technologies for use in animal farming. We worked with SRUC to identify discussion materials for focus groups with a wide range of expert stakeholders in animal farming. The workshops we held in July 2023 identified their views on digital transformation in the sector. Stakeholder responses to the cases were fed back to the research team at SRUC. Focus group research indicated that agroecological farmers felt excluded from current digital technology development.
- We worked with A Bigger Conversation, an NGO focused on developing public dialogue around food and farming technology, to organise a workshop in April 2024 that brought together agroecological farmers with digital technology developers and funders to discuss what a successful digital technology development for agroecology would look like. Workshop participants included Innovate UK, the National Farmers' Union, Devon County Council and Riverford Organics.

Outcomes: *Our consultation dialogue identified the need for additional data governance in the livestock sector, to help manage data integration across the supply chain, with British sheep farming acting as a primary usecase for expert-led in-depth interviews, from which we obtained valuable opinion data that will help inform the better regulation of livestock data collection, processing and governance, going forward. We are currently exploring methods of engagement with sector experts and external stakeholders designed to anticipate the potential future risks and implications of livestock data use.*



Prof. Sarah Hartley
University of Exeter

“Our work has been guided by the views and opinions of stakeholders in animal agriculture, through focus group research and interviews”

- **DIGIT & EPSRC Mandates:** Our research applies RRI to digital transformations. RRI forms one strand of WP4 within DIGITLab, crosscutting all work packages to ensure project outcomes are delivered ethically, for the social good. This also reflects UKRI and EPSRC's core commitment to RRI in their funded research.
- **RRI Principles:** Our work has been guided by the opinions of stakeholders in animal agriculture, acquired via focus group research and interviews, from which we have identified key areas of challenge and opportunity, notably: 1) agroecological farmers' participation in digital technology development, and 2) the need for additional governance approaches to livestock data.
- **Public consultation:** To increase public awareness and participation in discussions about the digital transformations we may want to see in farming, we worked with Exeter-based filmmaker Tom Law to produce a short, accessible documentary film, *Digital Animals*, presenting four case studies of digital technology in animal farming and raising critical questions for the audience to reflect on.

Activities:

- The Future of Digital Technologies in Agroecology'. Workshop, University of Exeter, 16 April 2024.
- 'Responsible Innovation and Digital Transformation: Shaping Digitalisation with and for Society'. DIGIT Lab seminar (online), 9 July 2024.
<https://digit.ac.uk/seminar/responsible-innovation-and-digital-transformation-shaping-digitalisation-with-and-for-society/>
- Public screening of *Digital Animals*, British Science Festival, London, 13 September 2024.

Summary and Next Steps: This research opens new pathways towards responsibly framed digital transformation in farming:

- Stakeholders care about the purpose, practicality and effects of digital technologies: it is essential that they be early on in the technology adoption process
- Agroecological farming is a potentially rich locale for digital transformation, where this is informed by farming communities themselves and is supportive of their social and ethical values.
- Good quality livestock data is valued by all stakeholder groups: good governance structures are required if we are to ensure that data is used efficaciously to address major challenges in animal farming.
- We will continue to disseminate our research to expert and lay audiences through publications and film screenings.
- We expect that our research on the anticipatory governance of data in agriculture will be of wider interest to researchers, policymakers and technology developers involved in digital transformation.

Wider salience: Our research is of direct relevance to public debates about the future of food systems and animal welfare, including efforts to raise awareness of digital transformation in farming and its sociotechnical consequences, for example, by disseminating our film *Digital Animals*. Future work includes finalising publication of a report on digital technologies for agroecological farming.

Publications and Outputs:

- Williamson, H.F. & S. Hartley (2024) Responsible development of digital livestock technologies for agricultural challenges: Purpose, practicality and effects are key considerations. *Sociologia Ruralis*. Early view.
- Hartley, S., T. Law & H. Williamson (2024) *Digital Animals*. Documentary film.

Follow up:

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