Digi4Live – Advancing sustainable animal production through data sharing: Case Study on policy monitoring, policy impact and administration

Riikka Holopainen[1], Leena Seppä-Lassila[1] , Maarit Ryynänen[2], Matti Pastell[2], Ryan Ford[3], Marjaana Spets[1], Mikko Rantahalme[1], Liisa Maunuksela[1], Jarkko Niemi[2]

Affiliations: [1] Finnish Food Authority, [2] Natural Resources Institute Finland, [3]VTT Technical Research Centre of Finland

Background

Digi4Live aims to enhance the capacity of the livestock sector actors across Europe to harness data-generating and digital technologies effectively. By using multi-actor approach, the project enables greater use of current and new livestock data & digital technologies in livestock tracking and tracing.

The European Union aims to establish common sectorial data spaces to make data across the EU available for access and reuse. The livestock sector is envisioned to become part of The Common European Agricultural Data Space (CEADS). Both the technological and governance building blocks for data spaces are still under active development. To reach the goal of developing innovative digitalised data and technology solutions, Digi4Live has six case studies that aim to develop digitalization concepts which have potential for EU-wide upscaling.

This case study aims to study and demonstrate the value of combining different data sources from farms in a fair and trusted manner.

Objectives

The goal of this case study is to develop data space proof-of-concept which will be applied to e.g., policy monitoring, environmental certification and food traceability through the development of a Digital Product Passport (DPP) for cattle to increase transparency, accountability, and traceability for each actor in the value chain. The cases will be developed at a Member State level, and thereafter upscaling potential at the EU level will be explored.

In addition, reporting system based on the Finnish Cattle Register data will be created. Detailed requirements for the identification and registration of cattle are laid down in a Commission Delegated Regulation 2019/2035 and Commission Implementing Regulation (EU) 2021/520. Currently, data of animal establishments is available only at the establishment level.

This Case Study will:

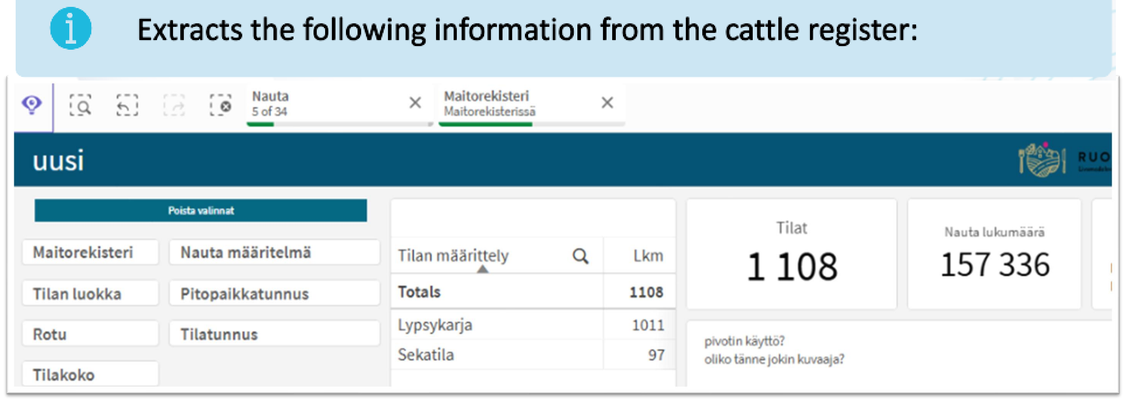
- **Animal welfare monitoring tool:** Connect animal establishment data with animal data to provide geographically real-time view on kept animals, animal movements and causes of removal. This will facilitate official control planning of animal welfare, animal health and risk preparedness. The integration of additional data, such as animal transport information, will be explored to expand the functionality.
- **Data space:** Develop an open source proof-of-concept data space. The minimum viable data space will be enhanced with consent management and decentralized user identification.
- **Digital Product Passport for cattle:** Develop a digital twin-based Digital Product Passport (DPP) for cattle to enable animal-level sustainability metrics. Data models, including semantic models, will be defined to support interoperability.
- Connect different data sources and a GHG calculation service to the digital twin using the minimum viable data space to demonstrate animal-level GHG calculation. The dual use of dairy cattle data for the agricultural greenhouse gas (GHG) inventory and Life Cycle Assessment will be explored.

More information: digi4live.eu

Preliminary Results

- Evaluated digital data sources available from Finnish dairy farms.
- Designed the first version of a Digital Product Passport for cattle.
- Defined semantic data models and digital twin submodels for storing and aggregating data to the Digital Product Passport.
- Developed a mock up milking data producer to test and demonstrate data exchange.
- Implemented a minimum viable data space based on IDSA components.

- Developed the first version of the animal welfare monitoring tool.
- Extracts the following information from the cattle register:



- Categorisation by farm type
- Number of farms
- Number of animals
- Age groups
- Mortality rates

Co-funded by the European Union

RUOKAVIRASTO Livsmedelsverket • Finnish Food Authority

Luke LUONNONVARAKESKUS

VTT

2 ZERO HUNGER

3 GOOD HEALTH AND WELL-BEING

6 CLEAN WATER AND SANITATION

15 LIFE ON LAND