Integrating innovative TECHnologies along the value Chain
to improve small ruminant welfARE management

TechCare final conference

Experience from other projects

DECIDE

Gerdien van Schaik

17 - 18 June 2025

University Foundation - Brussels

DE CIDE

Data-driven control and prioritisation of endemic contagious animal diseases

TechCare final conference, June 17, 2025

PROF. DR. GERDIEN VAN SCHAIK*
UTRECHT UNIVERSITY
* REPRESENTING THE DECIDE CONSORTIUM

Universiteit Utrecht

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 101000494.

The project

- Start July 1th 2021
- 5 years
- Budget €10 mln.
- 20 partners in 11 countries

Goal

Develop data-driven decision support tools and workflows that enable farmers, veterinarians and other animal health and welfare managers to improve control of prevalent endemic contagious animal diseases based on a multidimensional burden of disease metric.




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Focus

- Gastro-intestinal and respiratory tract infections of calves, pigs and poultry.
- Specific pathogens related to growth reduction and mortality in salmonids.
- Endemic diseases that
  1. may spread;
  2. have the highest impact;
  3. lead directly or indirectly to antimicrobial usage; and
  4. negatively influence the value chain.

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Overall concept

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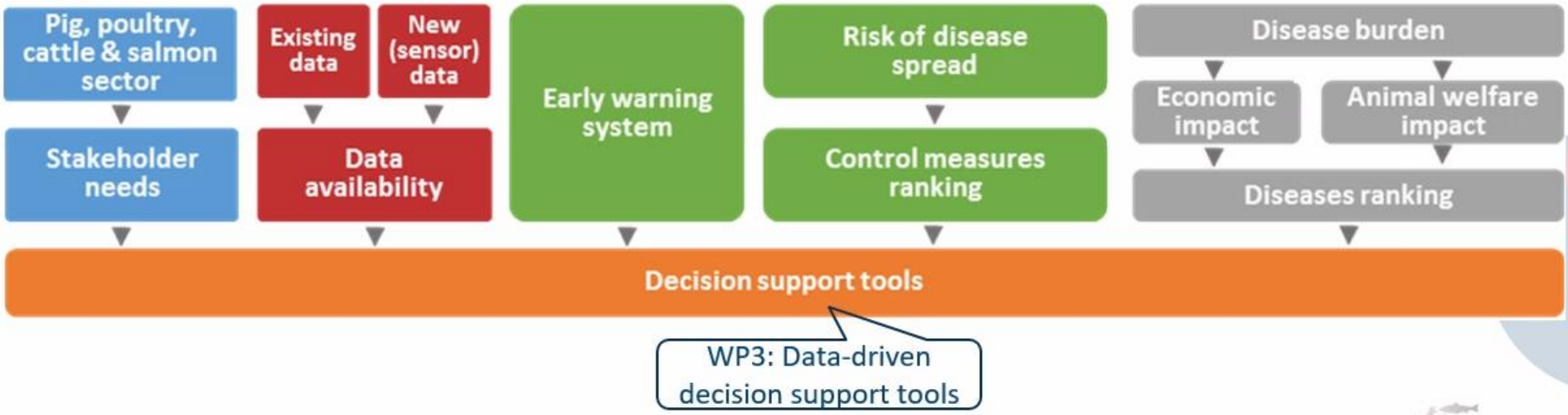
Overall concept



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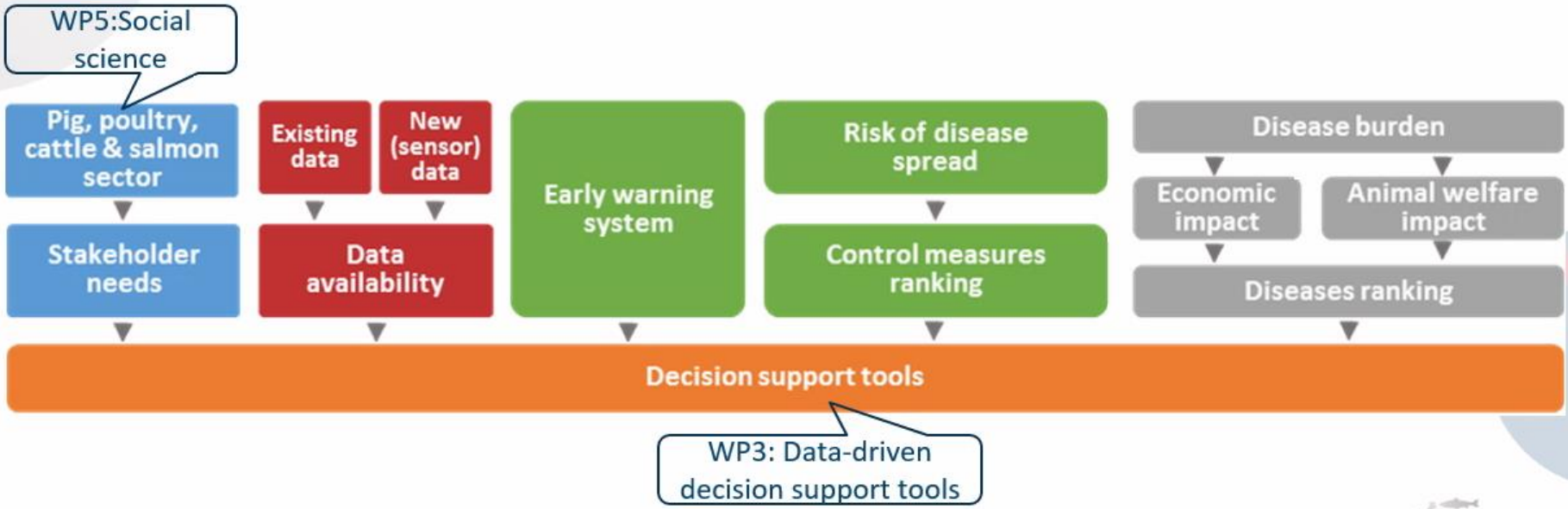

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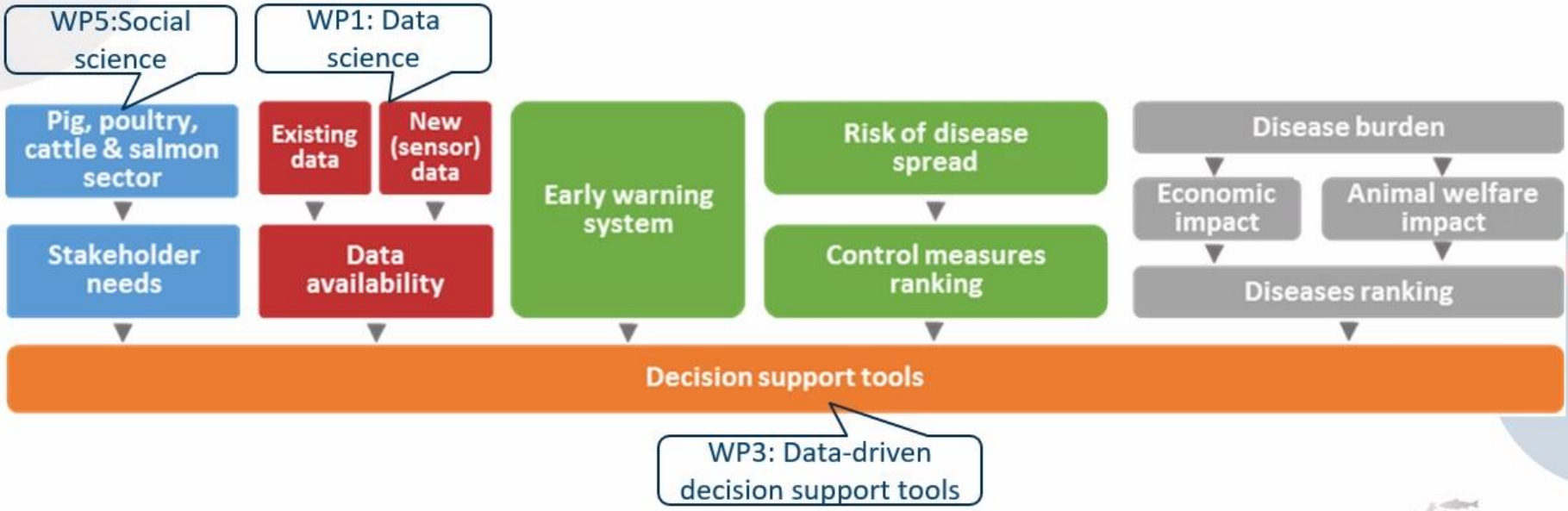

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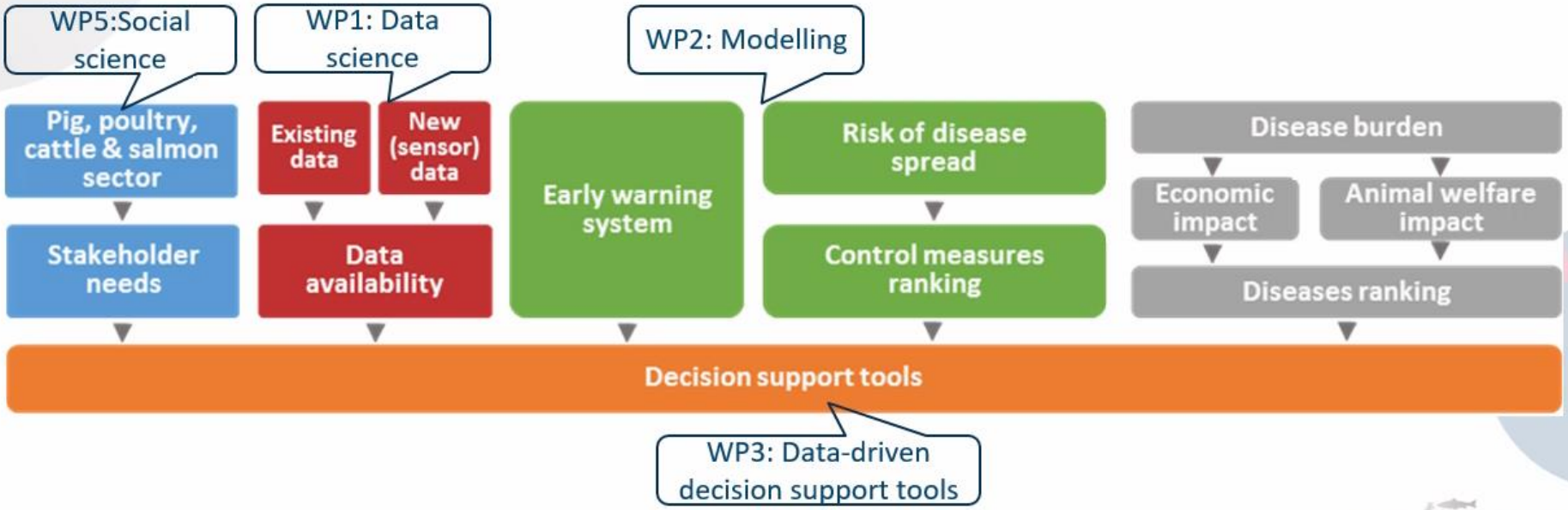

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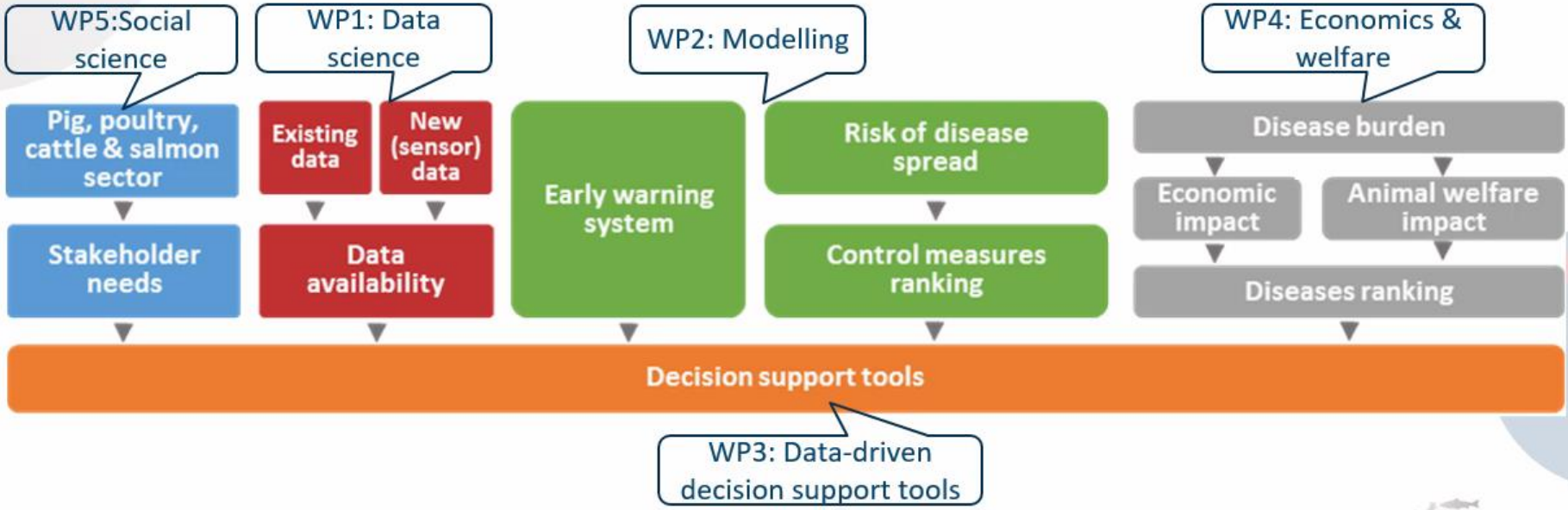
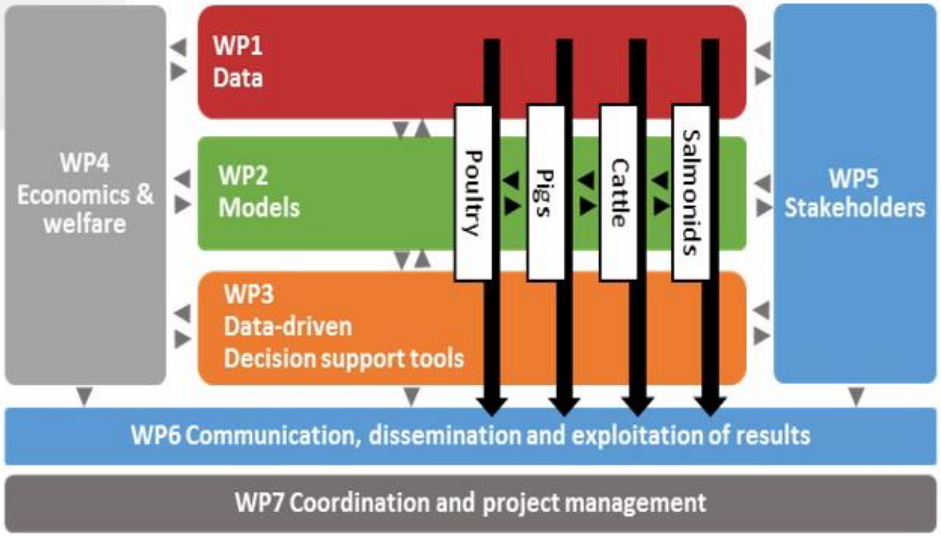


Overall structure of the work plan



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How did you address data collection/collation?

Any lessons that could be useful for TechCare or other projects?

WP1: data identification, characterisation and acquisition

Explore approaches for data access & usage to support animal health

- Assess availability and suitability of data
- Develop species-specific ontology
- Develop and test alternate approaches for data access (e.g. federated approaches)



Miel Hostens (UGent)	WP1 leader
Céline Faverjon (EpiMundi)	WP1 co-leader
Saba Noor (UGent)	PhD student

Assess availability and suitability of data

Objective of one of the first deliverable of WP1

1. **Create a catalog of all the datasets used in the project**
   - Collection of dataset information
   - Data access/sharing rules

2. **Evaluate compliance with**
   - GDPR
   - FAIR principles

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Online survey involving all the DECIDE participants

Assess availability and suitability of data

Results

Respondents

19 respondents

11 public-private organisations

63% never applied the FAIR principles

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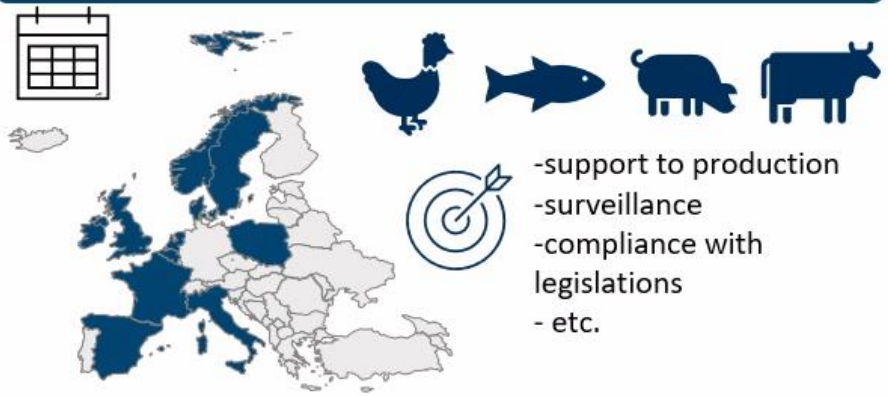
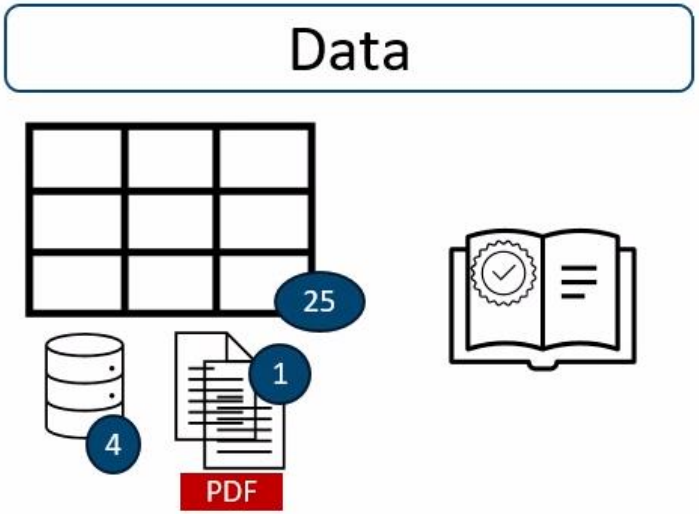
Datasets (n= 30)



-support to production
-surveillance
-compliance with legislations
- etc.

Assess availability and suitability of data

Results



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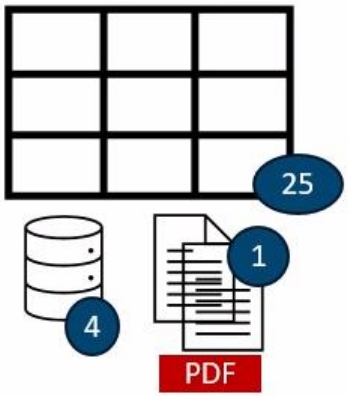
Results

Data



Metadata

Partial except in one case (data description, data access, data quality, etc...)
Scattered documents

14 datasets without identified available metadata

Assess availability and suitability of data

Key outputs

- *"Data sharing is actively occurring within the DECIDE project"* … but done in the "old way"

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Your data can't be "FAIR" (reused) if it doesn't have metadata

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Key outputs

- *"Data sharing is actively occurring within the DECIDE project"* … but done in the "old way"
- *"Critical lack of metadata available making any attempt to (re)use and share the available datasets challenging"*
- *"Needs for trainings and more applied guidelines in good data management practices and data governance at the community level"*

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ARTICLE

Reusability challenges of livestock production data to improve animal health

Camille Delavenne[1], Gerdien van Schaik[2,3], Jenny Frössling[4,5], Angus Cameron[1] & Céline Faverjon[1]✉

In veterinary epidemiology, using data routinely generated by stakeholders of the livestock production chains offers an opportunity for researchers to access a large amount of information that could be used to improve animal health. However, (re)using these non-scholarly data doesn't come without challenges. This study assesses the reusability for research purposes of 30 European datasets generated by the livestock sector to meet legislative or operational needs. Information about each dataset was collected through a questionnaire survey filled by the data owner or the data user (researchers). Datasets were described, and their compliance with the FAIR principles, a data-sharing standard, and the principle of accountability defined in the General Data Protection Regulation were assessed. The study highlighted major gaps in terms of compliance with data regulations and implementation of good data management practices, specifically considering the rare use of metadata and standard vocabularies. Filling these gaps is essential to reap the full benefits offered by the rapidly growing volume of heterogeneous data available in livestock production systems.

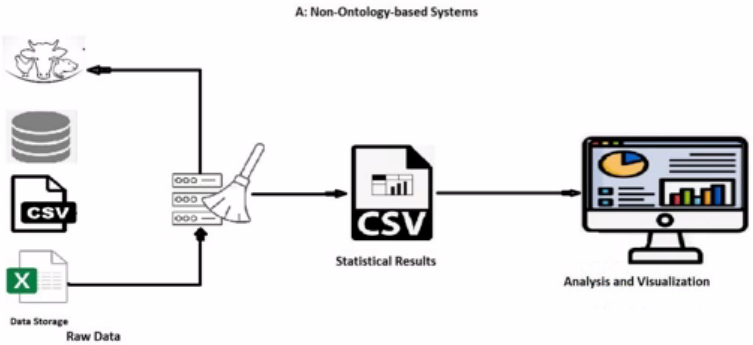
Introduction

Policymakers, funders and other stakeholders are currently investing considerable efforts to promote good data stewardship to facilitate data access and reuse and thus leverage investments in research, improve research reproducibility, and advance innovation[1–5]. In that context, data stewardship means not only proper data collection and annotation but also the 'long-term care' of the data to preserve them for future uses[6]. As part of these efforts, the FAIR guiding principles[6] have been developed to support stakeholders in the improvement of their data stewardship practices and are becoming a cornerstone of research policy and requirements for research data management plans (e.g., European research programs[7,8]). They are built on four foundational principles (i.e., Findability, Accessibility, Interoperability and Reusability) and primarily target scholarly data, meaning datasets used for research with the intention of producing a scholarly publication. However, the dream of scholarly data being easily reusable has yet to come true and significant improvements are still needed in many disciplines[2,9–12].

Livestock Health Ontology

WP1: Develop species-specific ontology

https://bioportal.bioontology.org/ontologies/LHO (cattle use case)



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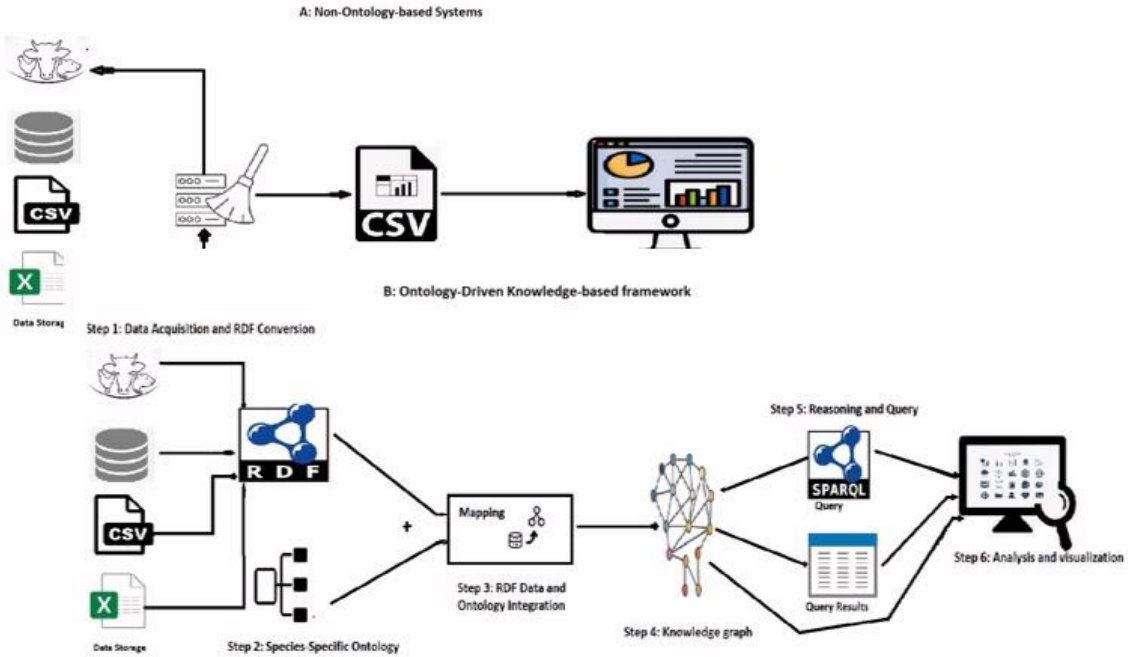

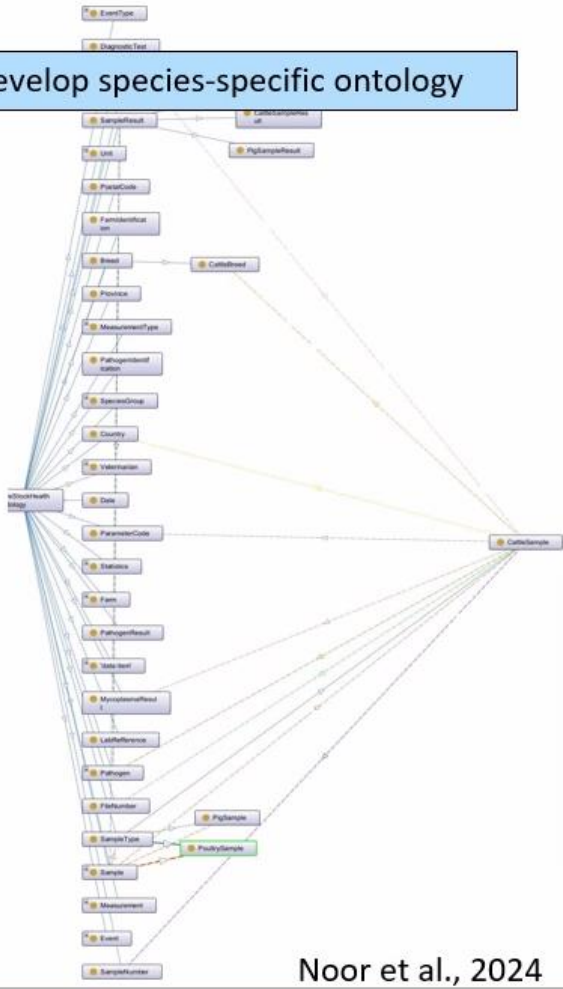

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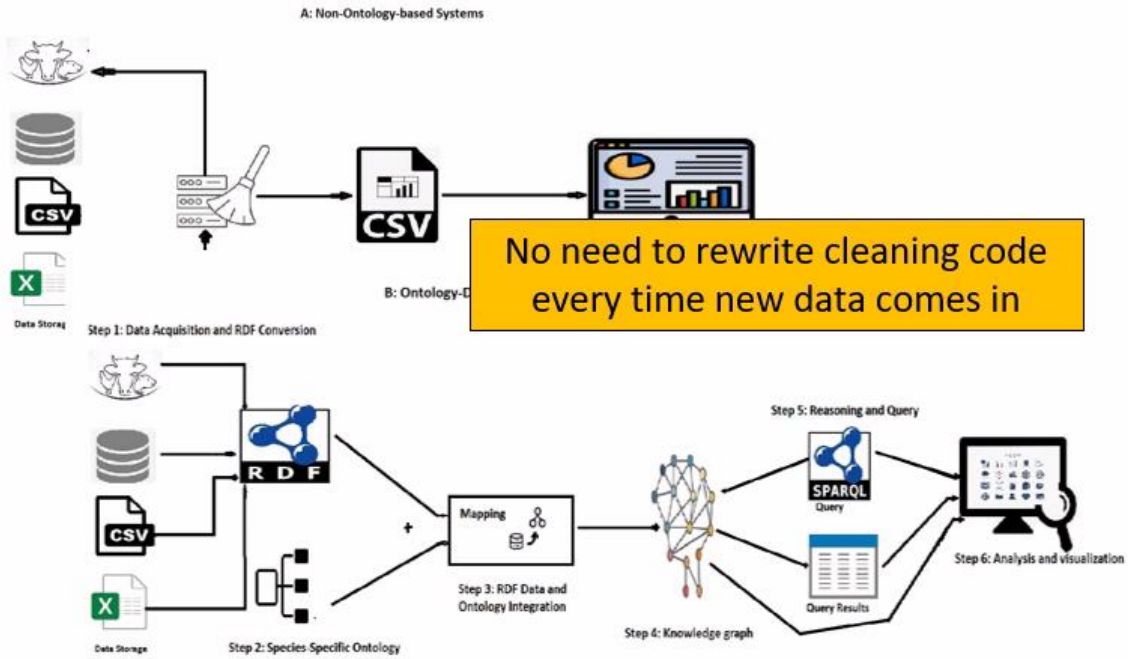
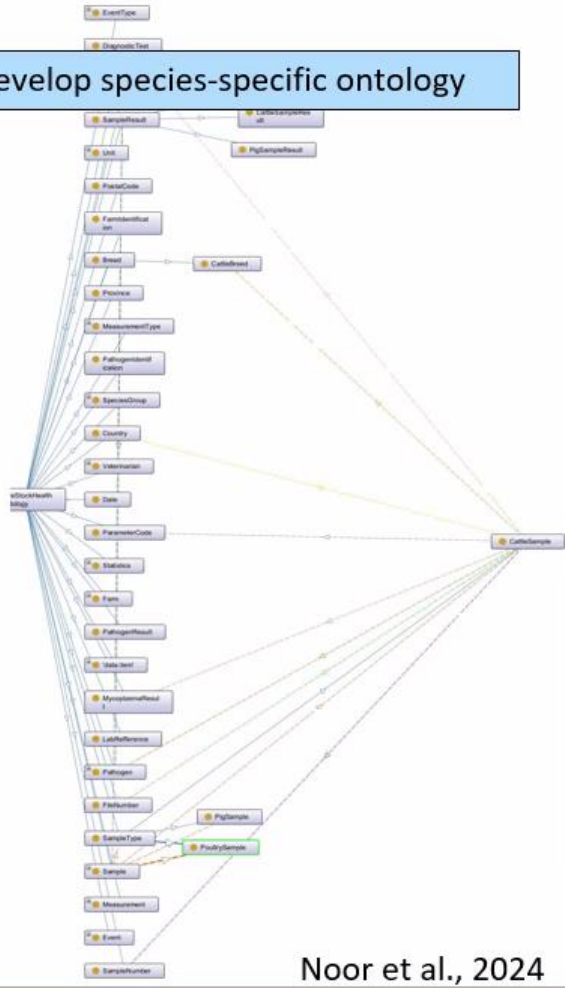


No need to rewrite cleaning code every time new data comes in



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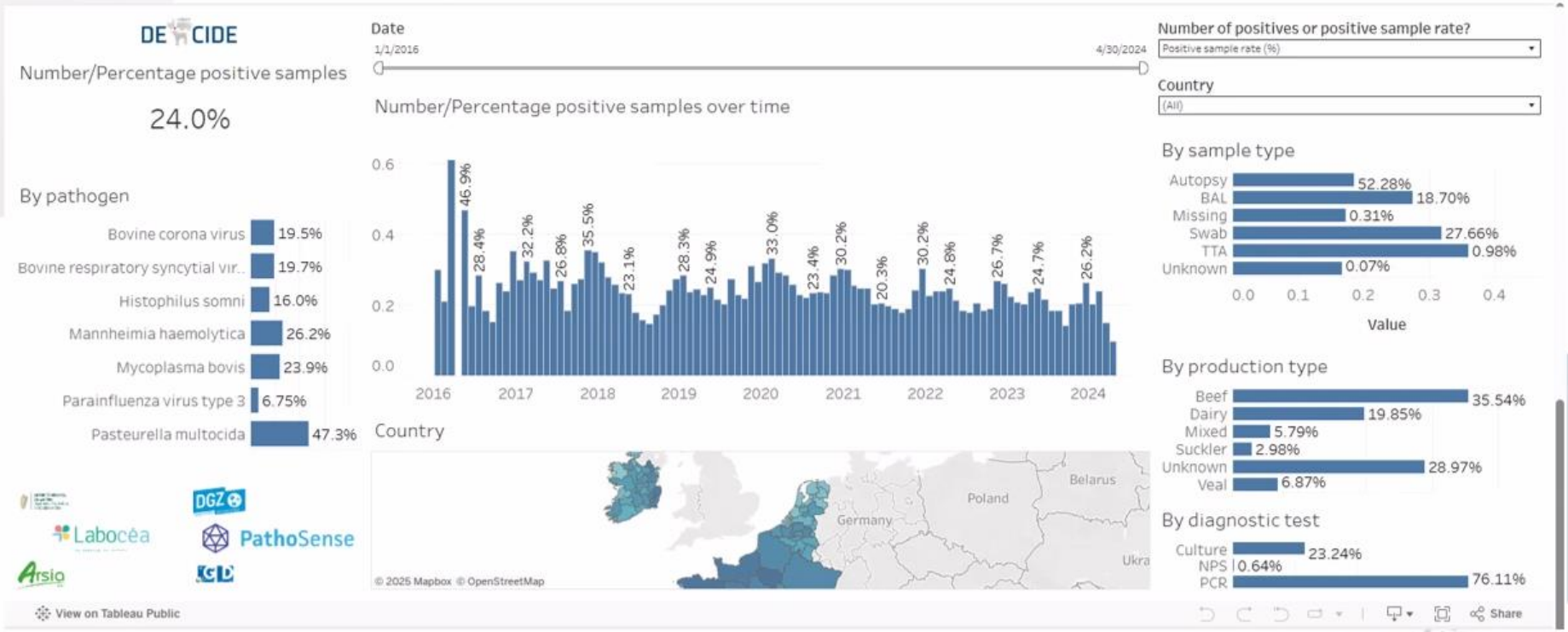
Cattle Barometer - Interactive dashboard



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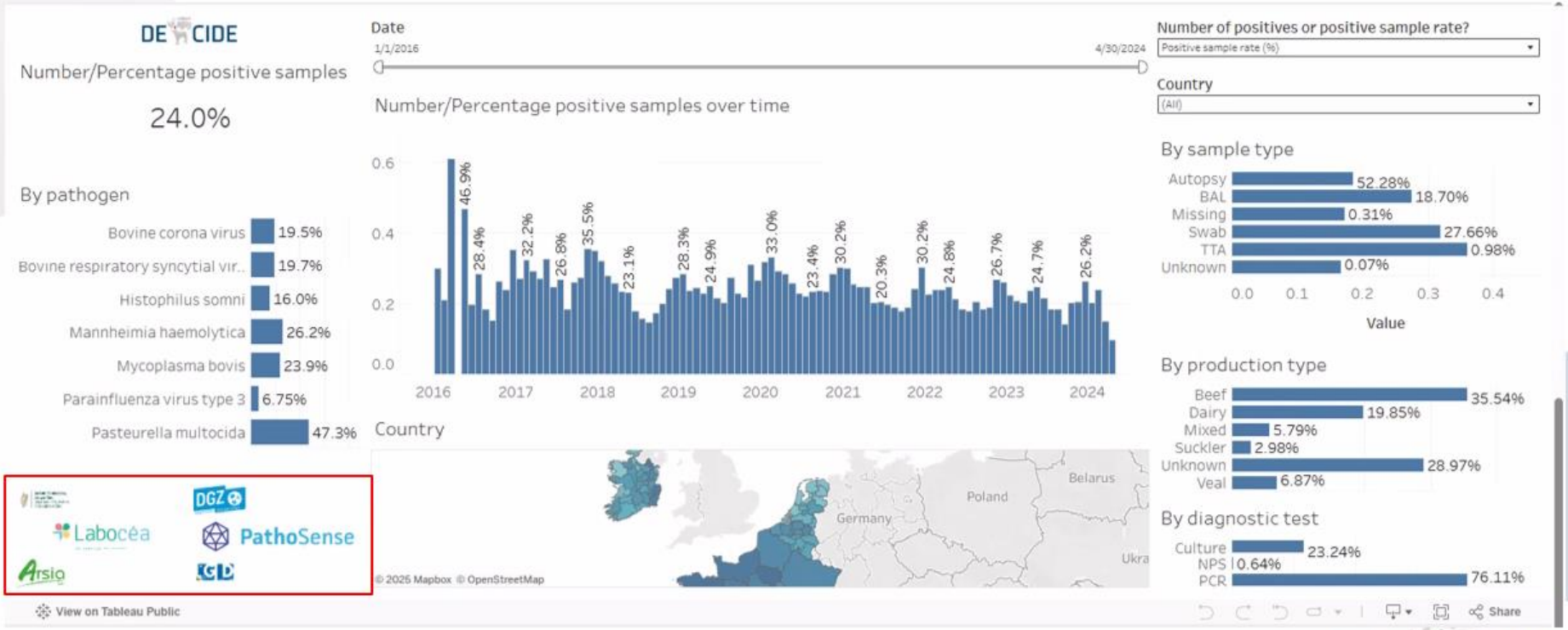


Develop species-specific ontologies and test federated approaches

Publications, workshops, discussions

burleigh dodds SCIENCE PUBLISHING

Agri Semantics: developments to improve data interoperability to support farm information management and decision support systems in agriculture

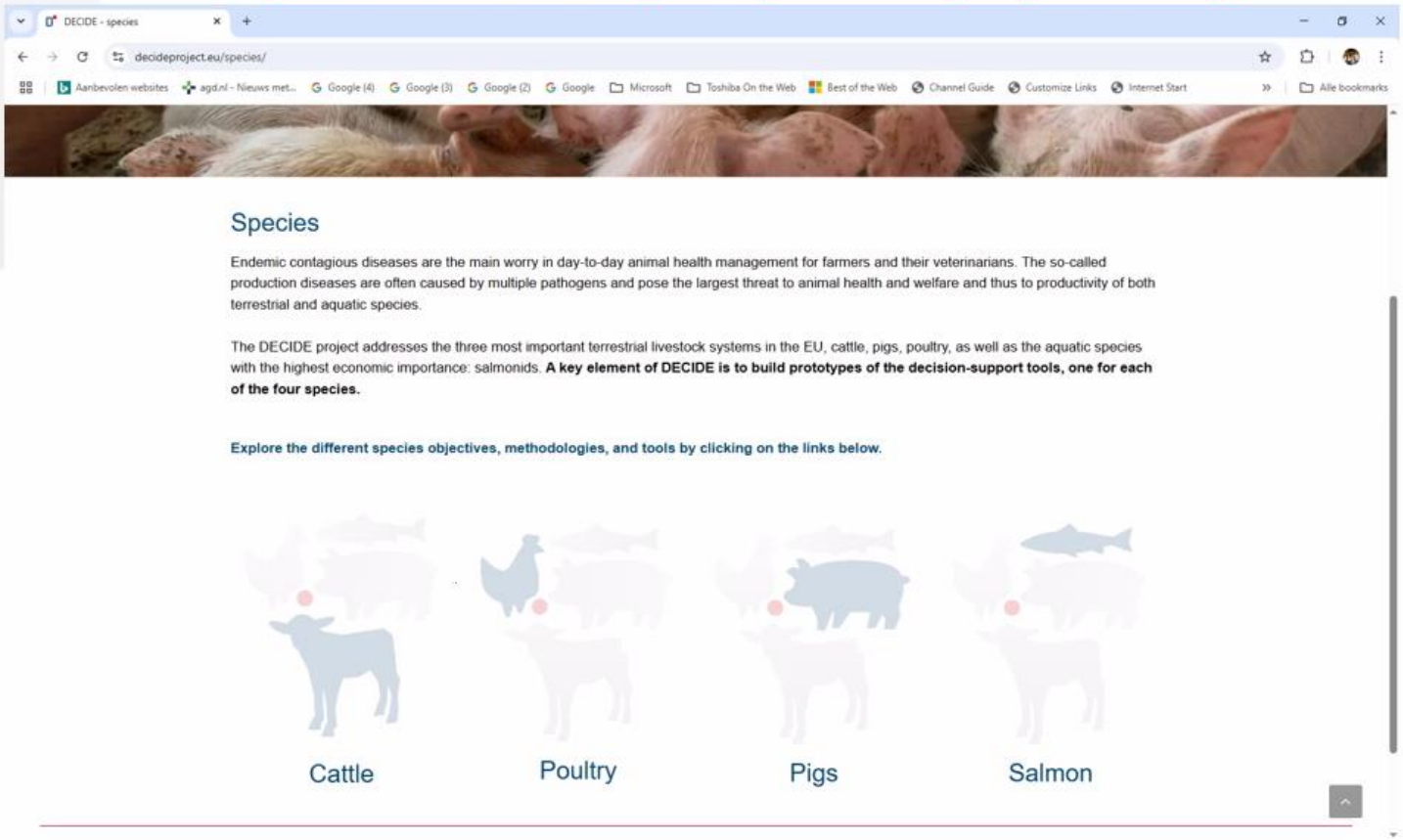
Saba Noor, Jade Bokma and Bart Pardon, Ghent University, Belgium; Gerdien van Schaik, Utrecht University, The Netherlands; and Miel Hostens, Cornell University, USA

Understanding Semantic Web and Ontologies for Precision Livestock Farming

Concluding remarks

- Lots of animal health data, access is challenging.
- We'll need a shared vision on
  - use of data to improve animal health and welfare
  - future research on data-driven animal health surveillance
- Use of this data to better control endemic infectious diseases can be an important pillar of sustainable animal production.

Tools: www.decideproject.eu/species/



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brings together 20 partners from 11 countries

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UNIVERSITEIT GENT

UNIVERSITY OF LIVERPOOL

ETH zürich

The University of Nottingham
UNITED KINGDOM · CHINA · MALAYSIA

SVA

INRAE

Veterinærinstituttet
Norwegian Veterinary Institute

IRTA CReSA

SRUC

ahi Animal Health Ireland

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IGD

EpiMundi
POPULATION HEALTH MANAGEMENT

SLW BIOLAB

HF Partners
Evidence-based, human-centered safety and security design

LELY

accelopment
takes you further

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