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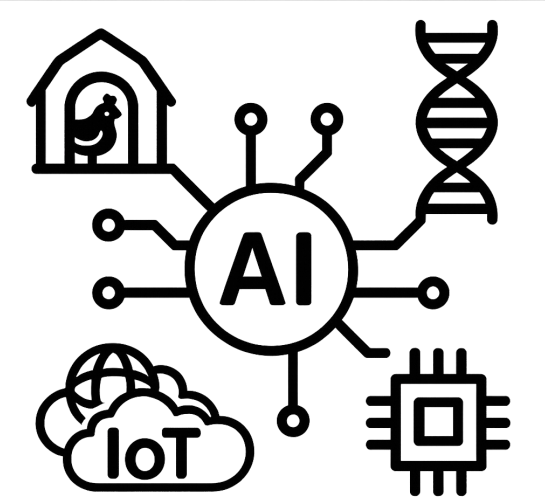
Digital technologies and Real-World Evidence for the Evaluation of Medicines

Prof Alasdair Cook MRCVS
AVC Chair of Big Data & AI Working group
5th Veterinary Big Data Stakeholder Forum,
Amsterdam, 10 Nov 2025



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Context

- Digital technologies and Real-World Evidence (RWE) for veterinary medicines.
- How digital data help us determine need, evaluate impact, and detect aberration.
- AVC perspective: independent, cross-sector view including practitioners, industry, academia, and regulators.
- Examples – projects with potential for delivering RWE relevant to veterinary medicines

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From digital signals to evidence

- Data sources: wearables/tags/boluses, video, apps, records, social media.
- Pipeline: measure → move → model → interpret → decide.
- RWD becomes RWE only with context, curation, and governance.

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Where value lies

- Primary value: on-animal insights for farmers and pet owners.
- Aggregated value: population health, stewardship, pharmacovigilance.
- Bridges operational data and regulatory evidence.

Barriers & incentives to data sharing

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- Barriers: ownership/IP, privacy, **trust**, interoperability, costs.
- Cultural norms – “It’s OUR data – even if we won’t exploit it to its full potential”
- Incentives: benchmarking, innovation, risk reduction, public good.
- Need aligned standards, incentives, and governance frameworks.

Video Analysis of BCS, Lameness & Fertility in GB Dairy Cows

- Video used for automated BCS & lameness detection
- Lameness & low BCS associated w 25% - 35% reduced probability of pregnancy
- Automated monitoring = objective, repeatable, cost-effective early warning

HerdVision 3D camera mounted above race to monitor BCS & mobility.

https://www.journalofdairyscience.org/article/S0022-0302(25)00615-0/fulltext

SRUC

UNIVERSITY OF SURREY

zoetis

CRANSWICK plc
Great British Taste

INNOVENT TECHNOLOGY

roboscientific

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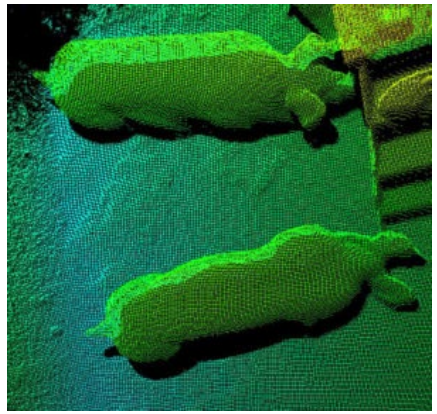
Surrey DataHub



FarmSense:

Ensuring sustainability of pig farming with automated machine vision and VOC monitoring

FarmSense

Optimising pet health monitoring and treatment through intelligent mobile alerts and data analysis

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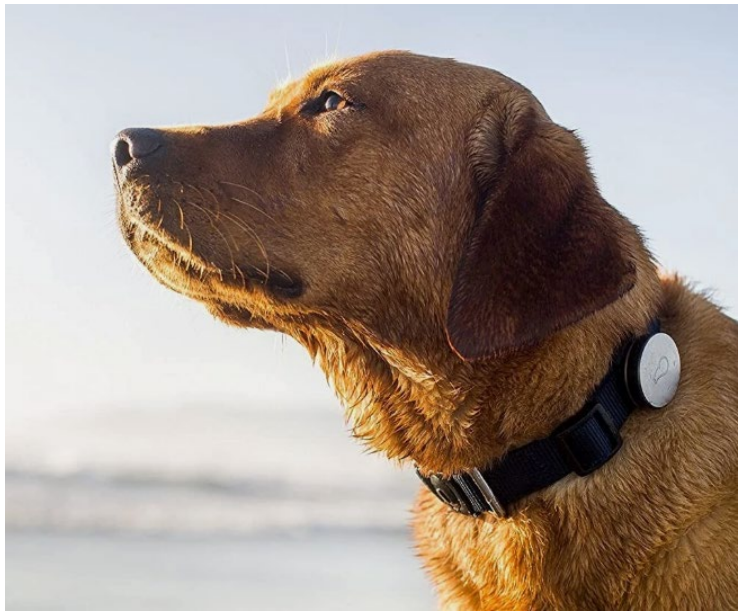
Surrey DataHub

zoetis

Definitive visit behavior change for dogs with a history of dermatitis.
AND
For this category….

Undetected Pruritus 40.8%



frontiers | Frontiers in Veterinary Science

Response of pet owners to Whistle FIT® activity monitor digital alerts of increased pruritic activity in their dogs: a retrospective observational study

Aletha Carson[1]*, Cassie Kresnye[1], Taranpreet Rai[2], Kevin Wells[2], Andrea Wright[3] and Andrew Hillier[3]

>6,000 dogs with clinical records & Whistle data

Hive

Feline pruritus via social media listening (SML)

- Thematic analysis of > 400 owner posts scraped from public sites.
- Owner-reported perceptions:
  - Licking/scratching; alopecia/scabs;
  - **QoL impacts**
  - **Concern of poor response to vet-prescribed treatment**
- Suspected causes: fleas, food allergy; uncertainty common.
- Value: non-traditional RWD complementing pharmacovigilance; signal detection for follow-up.
- Limitations: bias/noise – human-in-the-loop interpretation.

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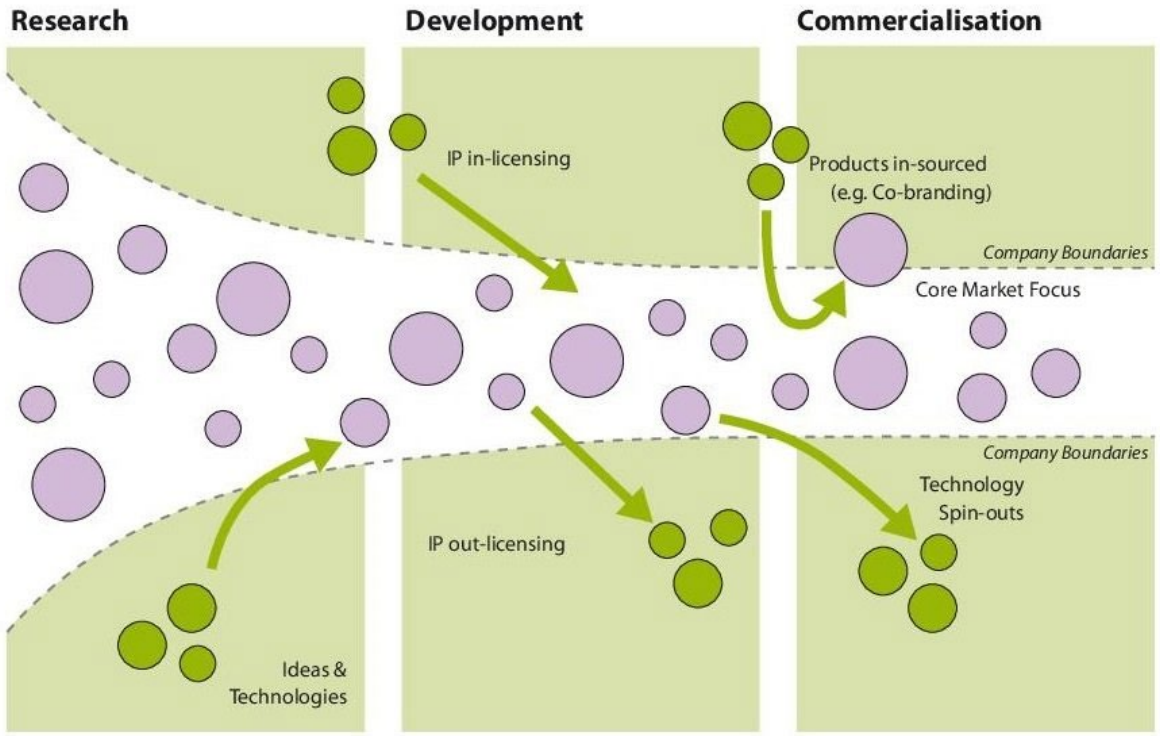
Summary: RWE from RWD

- Data derived from clinical records, routine farm records, sensors & social media
- Collaboration between academia & industry
- Once technology is adopted, cost-effective and dynamic
- Primary aim to provide early warning to owners = **value**
- Subject to due diligence, has potential for wider applicability
- Supporting post-authorisation evaluation of medicines
- Standardised, shareable datasets that could inform herd- and population-level analytics for veterinary decision-making and RWE generation

Data sharing & open innovation

- Three-stage model – Research → Development → Commercialisation.
- Enablers: governance, contributor incentives, transparent reuse.
- Open data: reusable with attribution/share-alike; accelerates innovation and supports public good.
- Needs de-identification, curation, and quality assurance.



https://www.rndtoday.co.uk/open-innovation/open-innovation/, accessed 05.11.2025

Kazantsev, N., Zwiegelaar, J., Islam, N., Maull, R., Brown, A. and Vorley, T. (2025), Leveraging Unstructured Data Sharing in Open Innovation: A Business Model for Large Research-Intensive Firms. R&D Management, 55: 1743-1753. https://doi.org/10.1111/radm.12777

Roles & responsibilities across the ecosystem

- Academia: methodology, validation, ethics, training.
- Industry: devices, platforms, scale, commercialisation.
- Regulators: standards, guidance, evidence sufficiency.
- Shared responsibility: align incentives to unlock population-level value.
- Cross-disciplinary, inter-institutional - & inter-generational

Governance, quality & when is evidence sufficient?

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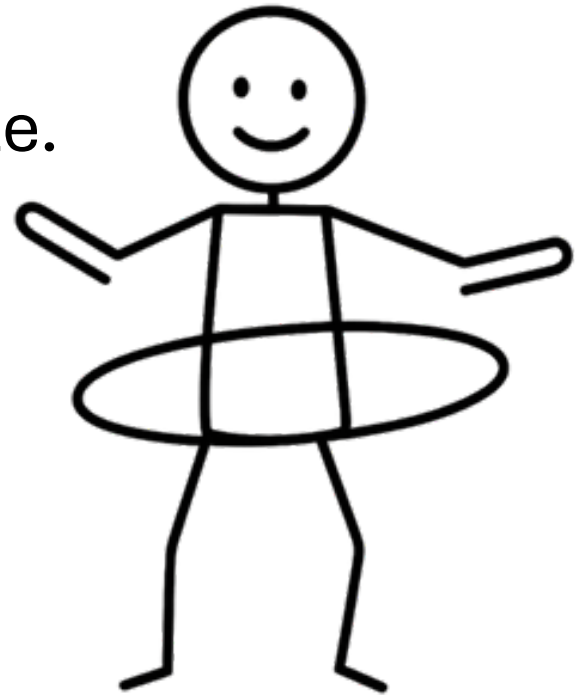
Quality = fit-for-purpose (relevance, traceability, bias management), not perfection.

Proportional ethics: consent, privacy-by-design, transparency.

Human-in-the-loop remains essential safeguard.

Pragmatic thresholds: credible, explainable, actionable.



Practical takeaways for medicines evaluation

- Build hybrid evidence: combine trials with RWE (devices, owner data, records, SML).
- Pre-specify outcomes; plan for data linkage and bias control.
- Share de-identified aggregates to enable public-good analytics.
- Start with feasible pilots (one species/indication), scale by template.

AI meant Artificial Insemination when I was young …

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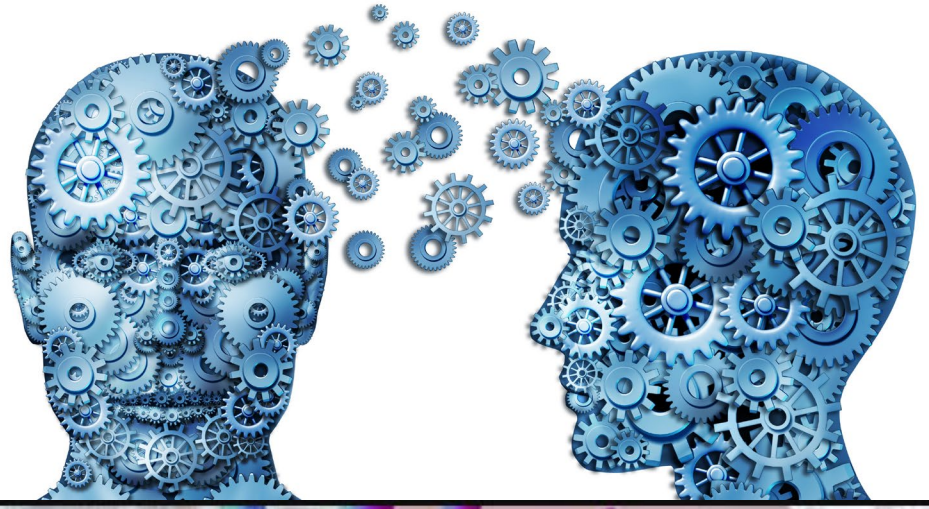
Thank you!



https://www.cdc.gov/flu/images/avianflu/chicken-graphic-banner.jpg