Opportunities and challenges of new technologies for performance recording with focus on claw health and metabolism

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Breeding goals are broadening with more and more emphasis on health and efficiency related traits. New technologies are revolutionising the dairy industry. In addition to achievements in omics technologies, information and communication technologies (e.g. Internet of Things, sensor technology) are also finding their way into modern dairy herds. Instead of punctual measurements, sensors record animal behavioral patterns that can imply on the animal well being and welfare. The large amounts of data generated by monitoring and the integration of various data sources promise completely new insights into animal health.

Traditional data pipelines with information from performance recording in combination with indicators for metabolic disturbances, such as veterinary diagnoses, feeding information, test of ketone bodies, body conditions score, and mid- infra-red spectra have existed for some time. They provide more precise possibilities to predict e.g. ketosis compared to fat-protein-ratio. For claw health, information from claw trimming, veterinary diagnoses and lameness scoring has only been partly made available. Sensor technology provides alarms based on irregularities of normal behaviour for early detection of disordes. Advanced methodology offers the possibility to combine various environmental informations and genomic background to get new insights in the occurance of or susceptibility to disorders. To explore these opportunities the big challenge is the integration of different data sources. In practice, data are often generated by different hardware and software products, which makes data integration more difficult due to different data exchange formats of the communication partners involved. Traits are defined differently by different products. It is therefore necessary to create structures to bring these data sources together in order to provide farmers with maximum support for herd management. Another challenge of data

integration from different sources is compliance with legal data protection regulations, since this is often associated with lack of clarity in practice. Cooperation between different partners and integrating different data is the precondition for successfully applying advanced data technologies based on complex trait definitions. Based on the project D4Dairy steps to overcome these challenges are presented.