

# Enhancing the Welfare of Broilers by Detection of Behavioural Changes

The behaviour of broilers can provide valuable insights into their health and welfare. Early detection of deviations from normal behavioural patterns allows for timely intervention in response to potential health or welfare issues. FlockVision continuously monitors six core behaviours using camera-based observation, generating objective, AI-analysed data. This information is brought to farmers via an app. It provides them with reliable, real-time insight into the status of the broilers, enhancing farm management efficiency and supporting the maintenance of flock health and welfare.

The behavioural patterns of animals are widely recognised as valuable indicators of their welfare status, comfort and the presence of health disorders. However, continuous visual monitoring of livestock is impractical in commercial production systems. Furthermore, human presence within the barn can influence animal behaviour and may disrupt normal flock activity.

FlockVision, developed by poultry health specialists at Royal GD, addresses these challenges through continuous camera-based monitoring of broiler behaviour. This system enables the collection of thousands of behavioural observations on a 24/7 basis without any physical disturbance to the flock.

Advanced artificial intelligence algorithms are used to ensure that broilers are detected. Following detection, the AI model quantifies sixteen distinct broiler behaviours, which are classified into six behavioural categories: eating, drinking, foraging behaviour, comfort behaviour, walking and resting. The processed data are visualised in a dedicated application that farmers can access on a mobile device.

The clear dashboard in the app provides real-time insights into behavioural dynamics at flock level, supporting the early detection of changes associated with compromised welfare or emerging health issues. Additionally, the system allows behavioural comparisons between flocks housed in different barns, enabling timely and informed management interventions in response to potential risks.

## Behaviours Detected through Video-based Monitoring

The surveillance camera installed in the barn provides continuous video footage, which is used to identify the broilers. The recorded images each focus on a single animal. Poultry specialists from GD reviewed and annotated over 40,000 fragments, assigning behavioural labels to each sequence. These labelled behaviours are considered representative of both individual broilers and overall flock behaviour. In total, sixteen distinct behaviours were defined and systematically classified into six key behavioural categories.

These include:

- **Drinking:** Picking a drinking nipple or drinking from a cup.
- **Eating:** Eating with the head above or in the feeder.
- **Foraging behaviour:** Activities such as ground scratching, where the animal scrapes through the bedding with its claws, and ground pecking, where the animal makes

pecking movements in the bedding.

- **Comfort behaviour:** Activities such as preening, where the bird uses its beak to clean its own plumage and keep its feathers in good condition, and stretching, where the bird stretches its wing or leg.
- **Walking:** The bird moves around.
- **Resting:** Sitting or standing idle. The animal remains stationary without any other activity, and sitting, where the animal lies down or sits without any other significant activity.

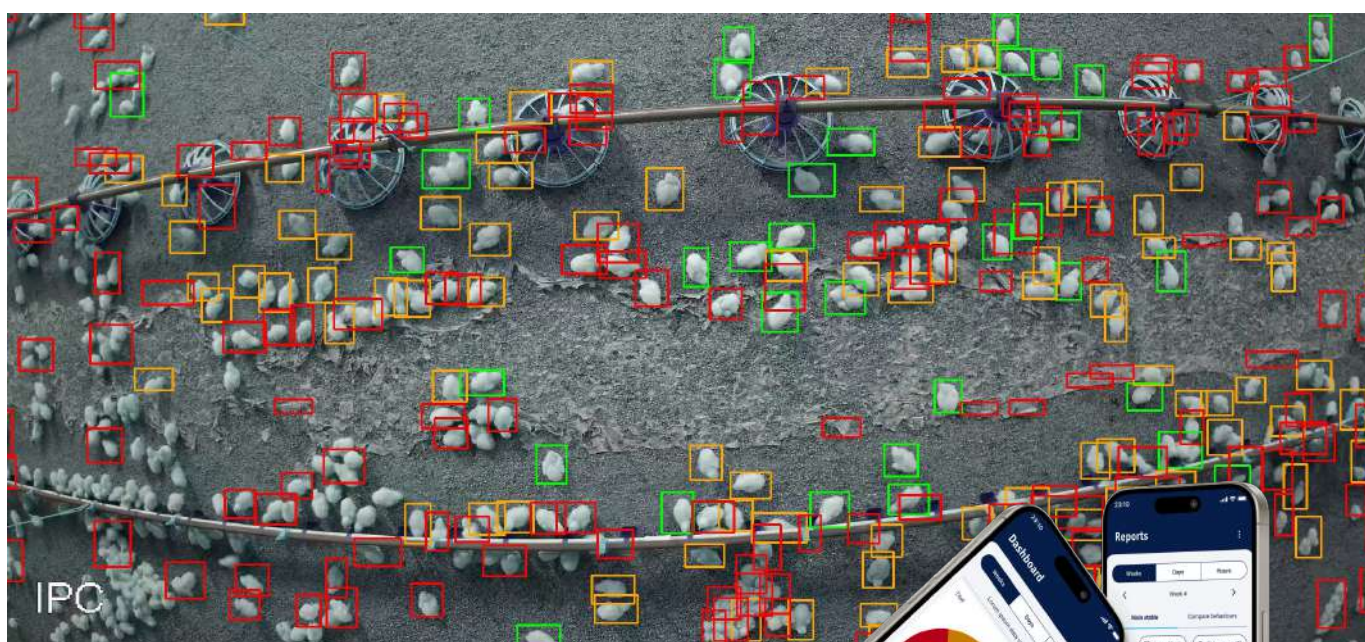
## Development of FlockVision

The AI-driven monitoring system was evaluated on five commercial broiler farms in the Netherlands that operate under different management and housing conditions, including differences in drinking systems, floor substrate use, enrichments and barn layouts. This diversity allowed assessment of system performance across a range of practical production environments.

Using camera footage in combination with the domain expertise of GD poultry specialists and feedback from participating farmers, FlockVision was further refined into a robust and reliable system capable of accurately recognising and analysing broiler behaviour in different housing systems. This iterative development process contributed to improved behavioural classification accuracy and practical applicability under field conditions. FlockVision was officially launched in 2025 and is currently implemented by a growing number of broiler farms in the Netherlands. In addition, the system is available to GD's international clients. Ongoing system development is supported through continuous learning: with user consent, anonymised camera footage is used to further train and optimise the AI model.

Beyond its current application in broiler production, FlockVision has the potential to be used in other poultry sectors, such as breeding operations, and can be adapted to additional animal species and livestock sectors.





### Advantages for the poultry farmer

- **Preventive rather than reactive health management**  
Continuous behavioural monitoring enables the detection of deviations from normal. This enables early intervention, potentially reducing disease severity, treatment intensity and associated costs.
- **Reduced labour demands and increased management efficiency without disturbance of the flock**  
Twenty-four-hour monitoring decreases the need for frequent physical inspections of the barn, while still providing comprehensive insight into flock status and activity.
- **Objective, real-time reassurance**  
Quantitative, real-time behavioural data provide farmers with an objective overview of flock health and welfare, reducing reliance on subjective assessment.
- **Demonstrable animal well-being**  
The availability of objective, animal-based welfare indicators allow farmers to substantiate that broilers are healthy, comfortable, and managed in accordance with welfare expectations.



### Jessica Hirsch-van Stek

Jessica Hirsch-van Stek is a Product Manager at Royal GD, specialising in the development of innovative, AI driven solutions for the animal health sector. With 13 years of experience in data enabled product innovation, she has led projects integrating artificial intelligence, sensor technologies, and predictive analytics to enhance disease monitoring and welfare insights. Her work includes launching tools such as FlockVision, which applies behavioural analysis and growth prediction algorithms. By combining strategic vision with emerging technologies, she contributes to building intelligent product ecosystems that advance animal health and support evidence-based decision making.