

IMPACT
DELIVERED

SECOND PRIZE



TOWARDS AN INTERNET OF COWS? UAR – LCM



THE EAR MOVEMENT PATTERN ALGORITHM
HAS BEEN DEVELOPED
USING DATA FROM
≈27,000
CATTLE WITH EAR TAGS



SMARTBOW'S SHARE OF
EXPORTS IS
≈98%



WITH A CURRENT TOTAL OF
35
EMPLOYEES,
SMARTBOW GENERATES
ANNUAL REVENUES OF
€35m



WORLDWIDE POTENTIAL OF
≈250m
DAIRY COWS AND
1m
CATTLE
ALL THAT COULD BE EQUIPPED
WITH THIS EARTAG

UAR is an Austrian Association of RTOs promoting innovative solutions at the crossroads where fundamental research meets applied research and offering businesses access to high quality R&D.

Linz Center of Mechatronics GmbH (LCM) is an Austrian RTO for applied mechatronics research enabling the production of prototypes and small lot sizes.

One of LCM's shareholders are the UAR.

Smartbow is the project partner of LCM.

UAR
Upper Austrian Research GmbH

LCM LINZ
CENTER OF
MECHATRONICS
GMBH

SMARTBOW
YOUR COWS. YOUR BUSINESS.

www.uar.at – www.lcm.at – www.smartbow.at

Monitor your cows' health and location from your app!

Is a cow in heat, suffering from a stomach ache or might she become ill? For many years, different systems have been used to monitor the activity of cows and detect heat, mainly using foot or neck tags. With its partner Smartbow, the Linz Center of Mechatronics, EARTO member through UAR, has developed EARTAG, an innovative software linked to sensors not only able to capture the position of the animals, but also to analyse their health status. For this, the positional change of the animals as well as the movement of their ears are recorded to

determine typical behavioural patterns by means of algorithms. The Smartbow's eartag can be used simultaneously for official animal identification and behavioural monitoring. It allows customers to recognise germinating diseases and the initial mating behaviour of their animals several days earlier than what is possible today. As a result, veterinary treatments can be improved and optimised, enabling a reaction in time to avoid expensive medications or even disposals.



EARTAG is an innovative software linked to sensors able not only to capture the position of cows in the fields, but also to analyse their health status.

Using an app to locate cows

It is easy for many systems to recognise when a cow is not at the milking parlour, but locating this cow in a herd of multiple animals is quite a challenge and a heavy burden for farmers. With this smart eartag, animals that need to be inseminated or treated, or the ones that have not yet been to the milking robot, can be located much faster via a simple app. This required pushing the tag design all the way to the limits set by the geometry and electrical principles to miniaturise the electronics. The tracking chips in the eartag transmit blinks to base stations attached in the field. An algorithm then takes data from at least four of these stations to calculate the exact position of the cow.

eHealth for cows

In addition to position detection, the eartag provides data about the health of the animal. This is done by an acceleration sensor and an algorithm for detecting ear movement pattern. The software records data such as a cow eating less, lying down less frequently, or walking more, and sends alerts in case of sudden and longer-term changes. This allows early recognition of digestive disorders, or metabolic diseases, and early detection that the cow is in heat. This leads to improved veterinary treatments and better inseminating results, shorter calving intervals and higher milk yield with less work effort for the farmer. It also provides more time for the farmer for other tasks.

Targeting worldwide commercialisation

The eartag is already produced by Smartbow GmbH and sold directly to farmers in Austria and Germany, with cooperations with various sales partners in Europe and the US. Around 250m dairy cows and 1m cattle worldwide could be equipped with this eartag to continuously control their location and health status and recognise diseases and mating behaviour earlier. Through the cooperation with Zoetis, a worldwide market penetration will be sought in the coming years. With a current total of 35 employees, Smartbow generates annual revenues of €35m, and the share of exports is approximately 98%. The collaboration between LCM and Smartbow will continue to develop new functionalities.