New Interface to exchange data on the Farm: Ori-Automate by FCEL and Valacta

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Abstract

The world of breeding is changing at all levels; expanding herd sizes, robotic milking, parlours with increasing technology and new sensors mean that we have a major challenge to analyse this new data and to accompany our dairy farmers.

France Conseil Elevage (French Federation to advise breeders for milk performance) and Valacta (Dairy Production Centre of Expertise Quebec-Atlantic) have developed a new interface to exchange data with the computerized milking systems of dairy farmers.

This new interface was developed with all the suppliers of the dairy market (milking machines and breeding sensors) as well as other systems that help the farmer to make a decision.

A first version was implemented in 2011, and a new version with more data included for transfer has been completed and is available as of February 2012.

The system is fully automatic, and can update the farmer's system daily when new data arrives from the regional database.

For the farmer, he doesn't need to re-enter the data collected in the central database (new animals, and new events). He can get the most current data from the herd management system directly, most importantly receiving data that is clean.

The latest version sends all the events and the feed rations for each cow, also extracting more information about milking, activity and weight.

The system uses an XML file format to communicate with the interface, making it very easy to implement for each data center that wants to use it.

Keywords: Computerized milking system, robot, milking parlour, central database, data exchange, sensors.

Introduction

How it all started

Due to an increase in the use of robotic milking units and fully computerised milking parlours, it has become logical and necessary to develop efficient communication methods between producer tools and regional database centers.

Breeders are becoming increasingly equipped with sensors. Many of these are related to the milking, involving milk meter weights and conductivity measures, with others recording measurements directly on the animals themselves. All these sensors require an accurate reading of basic data to function correctly.

Inventory, event dates (insemination date, calving date….) and milk recording data must circulate and feed into the breeders' software to enable them to have access to the most accurate data available from the regional processing centres.

The combination of information from these two systems seems inevitable in the management of high tech farms.

The first reflection on this idea started in France in 2009, when FCEL (France Conseil Elevage) decided to gather all the milking machine and milking robot manufacturers together in order to evaluate the possibility of exchanging data between their herd software and the regional databases, of which there are 5 throughout France.

Manufacturers were in favour of the idea because it not only proposed an exchange of data, but because this new interface would adapt itself to their communication interface, creating a dialog with the centralised database and their specific system database.

Valacta Quebec had developed a Trans-D interface based on the one way movement of data from the milking system or robot (recovery of on-farm data) into its central information center. During a study trip in Quebec, organized by the French federation of computing centers (Fédération des centres informatique français (FIEA)), Valacta made a presentation to the group of its Trans D interface that could communicate with Lely, Delaval and Westfalia equipment.

A partnership was concluded between Valacta and the FCEL to develop an interface that would be based upon on the Trans-D principle. The development would include exchanges between the manufacturers' software and the central databases in both directions; import and export.

The development of the interface ORI-Automate started at the beginning of 2010.

1   The operating principle

The Ori-Automate interface is directly installed on the breeder's PC; it is a bidirectional converter (see figure 1 below).
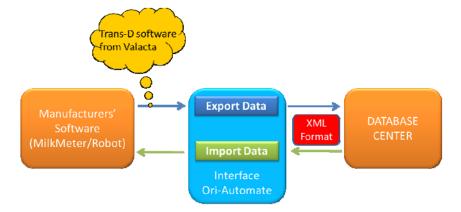

Figure 1: Operating principle

The system manages two functions, the import and export of data.

Import (Database Center (DC) towards on-farm controller): enables you to convert an XML file, generated by the regional database centers, and to update the on-farm software's database with the manufacturer's specific features.

Export (on-farm controller towards DC): the system uses the specific features of each on-farm software's database to recover the information and convert it into an XML format. It is the manufacturer's software that interacts directly with the data controller.

The system can import XML files, in the initial phase of the installation of a new milking robot or milking parlour, by creating for all animals the National Identification, Date of birth, Name, Sex, Calving date, Insemination date…

These files can be sent by FTP or automatic web service, the Ori-Automate interface works in batch mode.

2   The software development

A first version was delivered in December 2010. Using version 1 it is possible to load the animal inventories and to update the event information and milk recording results per animal, on the breeder's on-farm software. It is also possible to recover the on-farm information regarding the milk weights and the event data.

A second version is in development and is currently being tested in the field. This will load the feed rations into the robot controllers, as well as to feed distributors. The key element for breeders is to take advantage of the results from ration calculation tools and avoid having to manually load these values into their on-farm systems.

This version also includes data recovery from sensors at the milking, activity, weight and feed consumption levels.

A monitoring module is integrated in order to prevent milk meter deviation.

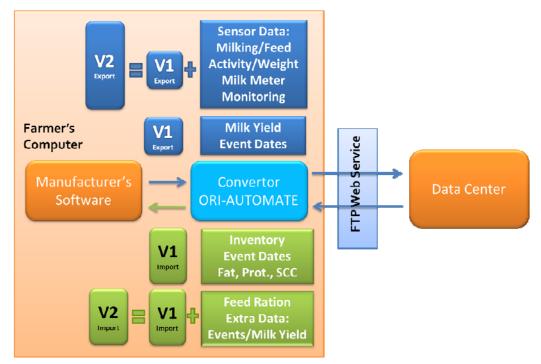The following figures 2 and 3 explain the two versions of Ori-Automate (versions 1 and 2).
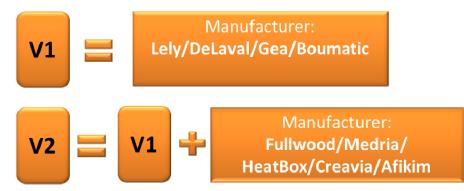
Figure 2: Data Exchange

Figure 3: Manufacturers compatible with Ori-Automate

3 Conclusion

This new interface is currently being implemented in France and will soon be introduced in Quebec. There is much interest in this interface by the breeders and demand at the international level is also present. The challenge for breeding organizations is to be able to interpret the new data being recorded by the on-farm controllers and to enhance this information so as to help breeders maximize the efficiency of their herd management.